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June 5, 2014

HAND DELIVERY

Office of Chief Clerk
ATTN: Agenda Docket Clerk
Texas Commission on Environmental
Quality
Mail Code 105
P. O. Box 13087
Austin, Texas 78711-3087

RE: TCEQ Docket No. 2014-0691-AIR
Freeport LNG Development, L.P.
Liquefaction Plant
Air Quality Permit Nos. 100114, PSDTX 1282, N150

Dear Docket Clerk:

Enclosed for filing in the above referenced matter please find an original and 7 copies of Applicant Freeport LNG Development, L.P.'s Response to Hearing Requests. Also please find an additional copy to be file-stamped and returned to the undersigned. All parties of record have been served pursuant to the Certificate of Service attached to the Response.

Please let me know if you have any questions. Thank you for your assistance.

Very truly yours,

Celina Romero

CR:ph

Enclosures

TCEQ DOCKET NO. 2014-0691-AIR

APPLICATION BY FREEPORT LNG DEVELOPMENT, L.P., LIQUEFACTION PLANT AIR QUALITY PERMIT NOS. 100114, PSDTX 1282 AND N150	§ § § § §	**BEFORE THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

APPLICANT'S RESPONSE TO HEARING REQUESTS

TO THE HONORABLE COMMISSIONERS:

Freeport LNG Development, L.P. ("FLNG") submits the following response in opposition to requests for contested case hearings filed on FLNG's application for an air quality permit seeking authorization to construct its proposed Liquefaction Plant. This application seeks to authorize sources of non-greenhouse gas emissions. A separate application to authorize sources of greenhouse gas ("GHG") emissions at this site is the subject of an application currently pending with the U.S. Environmental Protection Agency ("EPA"), which will be transferred to the Texas Commission on Environmental Quality ("TCEQ") upon program approval.[1] FLNG believes that each and every one of the requests for hearing filed in this TCEQ docket should be denied. In support of its response, FLNG would show the Commission as follows:

I. Background and Description of Facility.

FLNG is proposing to construct a Liquefaction Project that would allow it to convert domestically produced natural gas to liquefied natural gas ("LNG") for storage and export. The

[1] Indeed, FLNG has already indicated its selection of the TCEQ as its final permit authority by letter dated March 27, 2014 from Mark Mallett, Senior V.P. - Operations & Projects, FLNG to Wren Stenger, Director of Multimedia Planning and Permitting Division, EPA.

Liquefaction Project will allow domestically produced natural gas to be exported in the form of LNG and thereby allow FLNG's customers to respond favorably and proactively to short-term and longer-term fluctuations in domestic and global gas markets.

The proposed Liquefaction Project consists of two plant sites – the Pretreatment Facility and the Liquefaction Plant.[2] The Pretreatment Facility will be located approximately 3.5 miles inland to the northeast of the proposed Liquefaction Plant and FLNG's existing import terminal and along FLNG's existing 42-inch natural gas pipeline route. The Pretreatment Facility will purify pipeline quality natural gas, which then will be sent to the Liquefaction Plant for the production of LNG. Specifically, pipeline quality natural gas will be delivered to the Pretreatment Facility from interconnecting pipeline systems through FLNG's existing Stratton Ridge meter station. The gas will be pretreated to remove carbon dioxide, sulfur compounds, water, mercury, benzene, toluene, xylenes, and natural gas liquids. The pre-treated natural gas will then be delivered to the Liquefaction Plant through FLNG's 42-inch gas pipeline, where it will undergo a refrigeration process and be converted into LNG.

The proposed Liquefaction Plant, which will convert natural gas to LNG for export, will be constructed adjacent to FLNG's existing LNG import terminal located on Quintana Island near Freeport, Texas. The import terminal has been in operation since 2008. The proposed Liquefaction Plant and the existing import terminal will have certain shared facilities, such as LNG storage tanks, ship docks, buildings, control room, electrical equipment and connecting pipelines. Due to operational constraints, however, when the Liquefaction Plant is operating the import terminal will not be performing re-gasification operations.

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[2] *See* Map, depicting an overview of the relative locations of the Pretreatment Facility, the Liquefaction Plant and the existing Import Terminal. Exhibit 1-C to the Affidavit of Ruben I. Velasquez, which is attached hereto as Exhibit 1 (referred to herein as the "Velasquez Affidavit").

The Pretreatment Facility will consist of three natural gas treatment trains with the following major pieces of equipment: an amine sweetening system, a molecular sieve dehydration system, a mercury removal unit, additional electrical compression units, connecting laterals for natural gas supply to the Liquefaction Plant, and miscellaneous vessels. In addition, the Pretreatment Facility will include a heating medium system that will be integrated with a gas combustion turbine system to be constructed for on-site power production. The heating medium will be circulated from the combustion turbine waste heat recovery system to low and high temperature heat exchangers in the amine units.

The Liquefaction Plant will consist of three electric-motor driven mixed-refrigerant trains with propane pre-cooling, each capable of producing a nominal 4.4 million tons (metric tons) per annum of LNG, which equates to a total liquefaction capacity of approximately 1.98 billion standard cubic feet per day of natural gas. Emission sources at the Liquefaction Plant consist of the intermittent sources of one ground flare, two fire water pump engines, seven emergency generators, nine small diesel tanks, and associated equipment leak fugitives. By electing to use electric motors to run the refrigeration and compression process, FLNG has virtually eliminated all continuous emission sources during normal operations (other than fugitives) from the Liquefaction Plant; over 90% of the emissions were eliminated as compared to similarly sized, natural gas-driven turbines.[3]

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[3] Based on FLNG's analysis, had it utilized natural gas-driven turbines instead of electric motors, emissions from these sources would have been 353 tpy of NOx and 429 tpy of CO. *Also, compare* Corpus Christi Liquefaction, LLC project, TCEQ Docket No. 2013-1191-AIR, Air Permits Nos. 105710 and PSDTX 1306, which proposes the use of eighteen (18) gas-fired compressor turbines and seeks to authorize 2347 tpy of NOx and 2258 tpy of CO for a nominal capacity of 2.1 billion standard cubic feet per day of LNG; FLNG's proposed combined emissions are 65.8 tpy of NOx and 94.2 tpy of CO for its Liquefaction Project with a nominal capacity of 1.98 billion standard cubic feet per day of LNG –

The Liquefaction Project is an integrated project with two plant sites for which separate air quality permits will be issued for each plant site in accordance with 30 Tex. Admin. Code § 116.143(1). EPA required aggregation of the two plant sites for purposes of the GHG permit application.[4] Accordingly, in order to be consistent with EPA's aggregation of the two sites, FLNG requested TCEQ to combine the proposed emissions from the Pretreatment Facility and the Liquefaction Plant in the application review process and evaluate them together for purposes of applicability of PSD and NNSR and in the modeling for air quality impacts review. But for this combined review that was required by EPA for GHG permitting purposes, the plants are considered separate facilities with separate air permits.

The aggregation of emissions for these purposes resulted in more conservative PSD and NNSR determinations and modeling and impacts evaluations than if each plant site had been evaluated separately.[5] For example, if the estimated emissions from the two plants were

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meaning that FLNG's proposed facility will emit approximately 3% of the NOx and 4% of the CO emissions as compared to the similarly sized Corpus Christi Liquefaction project.

[4] EPA's decision to require aggregation of the two plant sites for purposes of the GHG application is now called into question by the recent D.C. Circuit Court decision in *National Environmental Development Association's Clean Air Project v. EPA*, No. 13-1035 (D.C. Cir., May 30, 2014) ("*Clean Air Project*"). In that case, the D.C. Circuit set aside an EPA Directive restricting the Sixth Circuit's decision in *Summit Petroleum Corp. v. EPA*, 690 F.3d 733 (6th Cir. 2012) ("*Summit*") to air permitting decisions in areas only under the jurisdiction of the Sixth Circuit. In *Summit*, the Sixth Circuit held that EPA may no longer consider interrelatedness in determining adjacency when making source determination decisions in the context of Title V or NSR permitting. The effect of EPA's Directive to apply *Summit* to a limited geographic area created a dual standard throughout the United States and on that basis was set aside by the D.C. Circuit. Accordingly, had EPA had the decision in *Clean Air Project* before it when determining whether to aggregate FLNG's two plant sites for purposes of the GHG application, it would have been required to reach the opposite conclusion and determine that aggregation is not required in this instance. These cases and the effects of aggregation of these two plant sites are discussed in more depth in this Response, *infra.*

[5] In addition, the fact that FLNG performed modeling reviews based on the combined emissions of the proposed plants results in a more conservative analysis of the impacts of emissions at a particular receptor. Obviously, if the more conservative modeling analysis demonstrates that a particular hearing requestor will not be impacted by the proposed emissions from the combined plant sites, an evaluation of impacts from the individual plant site would also show no impacts. *See* Affidavit of Thomas Dydek,

reviewed independently, the Pretreatment Facility would be considered to be a major source subject to PSD and NNSR review while the Liquefaction Plant would be considered a minor source, not subject to PSD or NNSR. Atmospheric dispersion modeling of air contaminant emissions from the two plants together allows for the evaluation of possible locations where emissions from both plants may overlap and perhaps result in a greater impact that might not otherwise be as significant if the two plants were modeled independently of each other. In fact, had the sites been evaluated separately, the Liquefaction Plant, as discussed below, would have qualified for Permit-by-Rule ("PBR") § 106.352 for its non-GHG emissions and would not have been subject to public notice or a contested case hearing at all. In addition, if the Liquefaction Plant had been separately evaluated, it would not have triggered the threshold for GHG permitting.

The hearing requestors in the case proceeding on the Pretreatment Facility and the Liquefaction Plant expressed a desire for a hearing on one permit application or the other by directing their request specifically to one draft permit or the other. Accordingly, the requests for hearing should be evaluated in the context of the potential impacts from the specific plant site for which the requestor expressed a desire for a hearing. Questions about how far the hearing requestor is from the proposed plant site, the direction of the prevailing winds, the amount of emissions, and potential impacts on the requestor's health and use of property should be analyzed with respect to the plant for which the requestor expressed a desire for a hearing. This kind of plant-specific review and analysis and ultimate referral to the State Office of

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PhD, DABT, PE, ("Dydek Affidavit") (stating that the evaluation of the impact of the emissions from the project as a whole results in a more conservative analysis than the impacts from the emissions from the Liquefaction Plant by itself.) Exhibit 2 at n. 1.

Administrative Hearings ("SOAH") is consistent with Commission rules. Aggregation of emissions for application evaluation purposes does not equate to aggregation of plant sites for purposes of evaluating requests for hearing.[6]

Accordingly, FLNG addresses in this Response the requests for hearing that were filed in the docket for the Liquefaction Plant. By separate filing, on this same date, FLNG is filing a Response to Hearing Requests filed in the docket for the Pretreatment Facility. As to the requests for hearing filed with respect to the Liquefaction Plant, FLNG's analysis herein demonstrates that none of the hearing requestors can demonstrate that they are affected persons and all of the requests for hearing filed in this docket should be denied.

II. Proposed Emissions from the Liquefaction Plant are so negligible that it is unreasonable to conclude that any person will be affected.

A. With emissions well below PBR levels, the Liquefaction Plant by definition is an insignificant source and if separately evaluated would not even have been subject to a contested case hearing.

In order to be entitled to a hearing, a requestor must demonstrate, among other things, a likely impact of the regulated activity on the health and safety of the person, and on the use of the property of the person.[7] In this case, the Liquefaction Plant's emissions levels are so low that it is unreasonable to conclude that any person will be adversely affected by them. The proposed emissions levels of the various pollutants sought to be authorized for the Liquefaction Plant are well below the levels established for PBRs. PBRs are specifically authorized for types of

[6] This treatment is appropriate because to do otherwise would discourage future applicants from aggregating emissions from otherwise separated, but interrelated, facilities. By aggregating, the public received the benefit of a higher scrutiny of the proposed emissions from the two plants than if they had been separately evaluated. But there is no corresponding benefit in the combined review of requests for hearings and if such a practice were encouraged, future applicants would be deterred from a practice that in the long run provides greater protections to the public and the environment.

[7] *See* 30 TEX. ADMIN. CODE § 55.203(c).

facilities that "will not make a significant contribution of air contaminants to the atmosphere."[8] As the chart below demonstrates, not only are the proposed emissions levels from the Liquefaction Plant much lower than the PBR levels, they are much lower by an order of magnitude in most instances:

Air Contaminant	Liquefaction Plant Proposed Emissions (tons per year)	PBR Emissions Limits (tons per year)
NOx	13.9	250
CO	26	250
VOC	6.96	25
PM10	0.06	15
PM2.5	0.06	10
H2SO4 (sulfuric acid)	0.0002	25
SO2	0.002	25

For example, the proposed NOx emissions at the Liquefaction Plant are approximately 5% of the PBR emission limit; the proposed CO emissions are approximately 10% of the PBR emission limit. Most other pollutant levels are equally below the respective PBR emission limit by a significant order of magnitude.

Individual facilities that are authorized by PBR are not subject to individual notice or a contested case hearing. This is because the PBR authorization itself has undergone public notice and the TCEQ has determined that the sources eligible to be authorized by PBR will not make a significant contribution of air pollution. If PBR-eligible facilities will not make a significant contribution of air pollution, the Liquefaction Plant certainly would not either. Indeed, but for the aggregation[9] of the Liquefaction Plant with the Pretreatment Facility, the Liquefaction Plant would have qualified for authorization by PBR § 106.352 and would not have had to undergo

[8] *See* § 382.05196(a), TEX. HEALTH & SAFETY CODE; 30 TEX. ADMIN. CODE § 106.1.

[9] A decision that is now called into question by the D.C. Circuit's decision in *Clean Air Project*, discussed *infra*.

public notice or be subject to a contested case hearing. ***Accordingly, as a matter of law as recognized by the PBR emission levels, the emissions from the Liquefaction Plant will not have a detrimental impact to the surrounding community.***

In addition, the sources of air emissions at the Liquefaction Plant are not steady-state facilities that will run continuously during normal plant operations. The facilities authorized by this permit are intermittent sources that will only run during emergencies or during maintenance, startup and shutdown activities. In fact, the only continuous source of emissions while the plant is conducting normal operations will be fugitive emissions. The combined sites have the potential to emit less than 5 tpy of VOC from equipment fugitives. While VOC BACT does not require leak detection and repair ("LDAR") for pipeline quality natural gas or LNG, FLNG nonetheless has agreed to apply TCEQ's 28MID LDAR with the addition of connector monitoring to receive VOC credit.[10] Accordingly, FLNG is controlling fugitive VOCs from the Liquefaction Plant beyond the regulatory requirements.

There are three hearing requestors who reside or intermittently occupy a vacation residence on Quintana Island: Harold Doty, Chris Kall, and James Kall. All assert that they will be affected by the air emissions from the site. However the air emissions from the Liquefaction Plant are so minimal, the emissions sources will run so infrequently, and the residences at issue are upwind of the site based on prevailing wind patterns (as discussed further below) that it is unreasonable to consider that they will be impacted by these emissions at all. Accordingly, based on all of these factors, it is reasonable for the Commission to conclude that emissions from

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[10] *See* Executive Director's Response to Public Comment, *Application by Freeport LNG Development, L.P.*, April 4, 2014 ("Executive Director's Response to Public Comment") at 15; TCEQ Preliminary Determination Summary, *Freeport LNG Development, L.P., Permit Numbers 100114, N150, and PSDTX 1282* at 5.

the plant are so negligible that no person within the surrounding community will be affected, much less these hearing requestors. Similarly, it is also reasonable for the Commission to conclude that the hearing requestors that do not reside on the Island, and are considerably further away than Harold Doty and the Kalls, would not be affected by the air emissions from the site.

B. EPA's aggregation decision is called into question by the D.C. Circuit's decision in the *Clean Air Project*.

As mentioned earlier, EPA required aggregation of the two plant sites for purposes of the GHG application. The plants are not located on contiguous tracts. They are located 3.5 miles apart. However, based upon alleged interdependency, EPA recommended aggregation of the sites. FLNG complied and aggregated the sources for the GHG application. In order to be consistent with the determination by EPA for the GHG application, FLNG requested TCEQ to combine the emissions for PSD and NNSR applicability and air impacts modeling reviews in the applications for the non-GHG emissions but to otherwise keep the applications separate and to issue two separate permits for each plant site.[11]

Interdependency has been one of EPA's long-standing rationales for determining "adjacency" in source determinations aggregating sites that are not physically proximate yet are functionally-related in some form or fashion.[12] However, the Sixth Circuit in *Summit* overturned EPA's long-standing interpretation and held that "EPA's determination that the physical requirement of adjacency can be established through mere functional relatedness is unreasonable and contrary to the plain meaning of the term 'adjacent.'"[13]

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[11] *See* Application Filing Letter from Ruben I. Velasquez, P.E., Atkins North America, Inc. to Mike Wilson, P.E., Director Air Permits, TCEQ, dated December 19, 2011.

[12] *Summit*, 690 F.3d at 744-46.

[13] *Summit,* 690 F.3d at 735.

Following this decision, EPA issued a directive to the Regional Air Directors of each of the ten EPA regions explaining the applicability of the *Summit* decision.[14] "The *Summit* Directive states that 'EPA may no longer consider interrelatedness in determining adjacency when making source determination decision in its title V or NSR permitting decisions *in areas under the jurisdiction of the [Sixth] Circuit.*'"[15] EPA went on to state that "[o]utside the [Sixth] Circuit . . . EPA does not intend to change its longstanding practice of considering interrelatedness in the EPA permitting actions in other jurisdictions."[16]

EPA's decision to limit the reach of the *Summit* decision to only those geographic areas under the jurisdiction of the Sixth Circuit was challenged in *Clean Air Project.* Petitioners in that case claimed that the *Summit* Directive placed facilities located outside the Sixth Circuit at a competitive disadvantage and that it is "plainly contrary to EPA's own regulations, which require EPA to maintain national uniformity in measures implementing the CAA and to 'identify[] and correct[]' regional inconsistencies by 'standardizing criteria, procedures, and policies.'"[17] The D.C. Circuit agreed and held that the *Summit* Directive must be vacated because it violates EPA's "Regional Consistency" regulations.[18]

Accordingly, had EPA not inappropriately limited the *Summit* decision to just those areas within the jurisdiction of the Sixth Circuit and/or had EPA Region 6 had the decision of the *Clean Air Project* before it when determining whether to aggregate FLNG's two plant sites for

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[14] *Clean Air Project,* slip op. at 3, quoting from *Applicability of the Summit Decision to EPA Title V and NSR Source Determinations* (December 21, 2012).

[15] *Id.* (emphasis added).

[16] *Id.*

[17] *Clean Air Project,* slip op. at 4 (*citing* 40 C.F.R. § 56.3(a), (b)).

[18] *Clean Air Project,* slip op. at 15.

purposes of the GHG application, EPA Region 6 would have been required to reach the opposite conclusion and determine that aggregation is not required for this project. If that had been the case, FLNG would not have requested TCEQ to aggregate emissions from the two sites for purposes of PSD and NNSR applicability and air impacts modeling reviews. The Liquefaction Plant and the Pretreatment Facility would have been separately reviewed; the Liquefaction Plant would have been authorized by a PBR and would not have triggered the thresholds for permitting GHGs.

We respectfully request the TCEQ Commissioners to take this into account in its review of the emissions and requests for a contested case hearing particularly in the context of the Liquefaction Plant. FLNG is not asking the TCEQ to undo the reviews that have already been conducted on these applications, it is simply asking the TCEQ Commissioners to take into account the unique posture of the Liquefaction Plant when evaluating whether any particular Hearing Requestor is an affected person with respect to this Plant.

C. Air dispersion modeling and toxicological analysis confirm that emissions from the Liquefaction Plant will not adversely impact the Hearing Requestors.

It is important to emphasize that air dispersion modeling and toxicological analysis was performed on an aggregate basis. As stated in the Velasquez Affidavit, "[t]his is a conservative procedure since the maximum concentration from all sources modeled concurrently cannot be more than the sum of the maximum concentration from each source modeled separately."[19] Even with this conservatism built into the modeling conducted, the modeling results confirm that emissions from the Liquefaction Project will not have any adverse impacts. To the contrary,

[19] *See* Velasquez Affidavit, Exhibit 1 at 3.

those analyses show that emissions from the Liquefaction Project as a whole – *i.e.*, Liquefaction Plant emissions *combined with* Pretreatment Facility emissions – will be many orders of magnitude below the applicable federal and state air quality standards.

To begin with, air modeling submitted to and approved by TCEQ in the permit application review process demonstrated that emissions from the Liquefaction Project will be in compliance with all applicable state and federal air quality standards. Notably, no requestor has disputed the results or the procedures used in the air modeling within its comments or request for contested case. These air modeling results, approved by TCEQ and undisputed by the requestors, demonstrated that Liquefaction Project emissions will comply with applicable Prevention of Significant Deterioration ("PSD") NAAQS requirements and all applicable State Property Line Standards.[20] That modeling also showed that Liquefaction Project emissions will be below applicable effects screening levels ("ESLs").[21]

Further, FLNG went beyond this analysis to ensure that there would not be any adverse impacts at the locations of the individual Hearing Requestors' residences. Specifically, FLNG consultants performed air modeling analysis to determine impacts of air contaminants emitted from the Liquefaction Project occurring at a receptor point closest to each Hearing Requestor's residence.[22] This modeling analysis was then reviewed by a Board Certified Toxicologist, Dr. Thomas Dydek, Ph.D, D.A.B.T., P.E, to determine whether the Hearing Requestors would suffer any adverse health effects as a result of the level of emissions predicted to occur at the location of their residences. The results of Dr. Dydek's analysis are summarized in his Affidavit, which

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[20] *Id.* at 2-3.

[21] *Id.* at 3.

[22] *Id.*

is attached hereto as Exhibit 2. Specifically, Dr. Dydek concludes "the Hearing Requestors will not be affected in any way by the emissions from the proposed Freeport LNG Liquefaction Plant."[23] Dr. Dydek summarized his conclusions as follows:

> The following Tables 1a through 1e show the maximum predicted impacts of air contaminants at the Requestors' residences ranged from 0.01% to 1.4% of the applicable National Ambient Air Quality Standards. Another way to express this is that the predicted impacts were from 70 to 10,000 times lower than the NAAQS.
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> The following Tables 2a through 2e show the maximum predicted impacts at the residences ranged from 0.07% to 0.22% of the State of Texas Property Line Standards. In other words, the impacts at the Requestors' residences were from 450 to 1,400 times lower than those standards.
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> The following Tables 3a through 3e show the maximum predicted impacts at the residences for chemicals having ESLs ranged from 0.000000006% to 2.0% of the ESLs for those chemicals. Put another way, these impacts were from 50 to 1.6 billion times lower than the applicable ESLs.[24]

Dr. Dydek also explains that the federal and state health standards referenced above are conservatively set because they are set at levels protective of the health and welfare of even the most sensitive members of the general population with an adequate margin of safety. Similarly, ESLs are very conservative because they are set at levels that typically are orders of magnitude smaller than exposure levels that can actually cause adverse health effects.

The air dispersion modeling upon which Dr. Dydek's conclusions are based was also conservative in that it likely over-predicted levels of air contaminants that could actually occur, given that the modeling was based on the assumption that maximum emissions would occur during those hours in which meteorological conditions least favor the dispersion of those air

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[23] *See* Dydek Affidavit, Exhibit 2 at 19.

[24] *Id.* at 5.

contaminants.[25] Finally, as stated above, modeled emissions were emissions not only from the Liquefaction Plant but also from the Pretreatment Facility, meaning that impacts from the Liquefaction Plant alone would be expected to be even lower than the extremely minimal levels referenced in Dr. Dydek's analysis.[26]

Notwithstanding these various levels of conservatism built into the analysis, Dr. Dydek still concluded that the predicted maximum impacts at the Hearing Requestors' residences are "small percentages" of federal and state standards and guidelines.[27] This being so, none of the Hearing Requestors can demonstrate that they will be adversely impacted at all, much less in a manner not common to members of the general public, as a result of emissions from the proposed Liquefaction Plant.

III. Groupings of Hearing Requestors and Summary of Arguments.

The persons who requested a contested case hearing with respect to the Liquefaction Plant can be categorized into three (3) groups – 1) two persons who reside on Quintana Island and one person who claims to occupy a residence on weekends and/or holidays on Quintana Island; 2) two persons who live inland from the Liquefaction Plant; and 3) those persons who requested a contested case hearing during the first comment period on the application and prior to FLNG's change in location of the Pretreatment Facility. For ease of discussion and presentation of the issues, FLNG will refer to the hearing requestors in these groups throughout

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[25] *See* Velasquez Affidavit, Exhibit 1 at 4.

[26] *Id.* at 3 (stating "[a]gain, this analysis was conservative because it took into account combined emissions from both the proposed Liquefaction Plant and the proposed Pretreatment Facility, as opposed to emissions from each plant individually.").

[27] Dydek Affidavit, Exhibit 2 at 19.

this Response. A fuller description of the hearing requestors and a summary of FLNG's arguments in opposition to their requests for hearing is as follows:

A. Group 1.

The first group of hearing requestors consists of two persons who reside on Quintana Island. These persons are Harold Doty and Christopher Kall. James Kall, the third individual in this group, does not own any property on Quintana Island.[28] He resides in Rosenberg, Texas (which is over 50 miles away). However, he represents that he and his family frequent a residence on Quintana Island on weekends and holidays. Christopher and James Kall are brothers.

While Mr. Doty and Christopher Kall represent that they live less than ½ mile from the center point of the proposed Liquefaction Plant, in reality they live almost a mile away, or 0.92 miles and 0.84 miles, respectively. James Kall similarly underestimates his distance from the center point of the plant, claiming that the residence he visits is 1 mile away, while in reality it is over 1 mile away.[29] Due to the direction of the prevailing winds, the negligible level of air emissions from the Liquefaction Plant and intermittent run time of the emission sources at this site, these three persons simply cannot demonstrate that they will be affected by the emissions from this site. In fact, as demonstrated in the Dydek Affidavit, the concentrations of air pollutants emitted from the Liquefaction Plant at each of these hearing requestor's residence are predicted to be a trace percent of the applicable national ambient air quality standard

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[28] *See* Affidavit of Joseph Patterson, attached hereto as Exhibit 3.

[29] *See* Map, showing the respective locations of Harold Doty's, Christopher Kall's and James Kall's residences relative to the center point of the proposed Liquefaction Plant (attached to the Velasquez Affidavit as Exhibit 1-D).

("NAAQS"), State of Texas Property Line Standard or Effects Screening Level ("ESL").[30] Further, as a matter of law as recognized by the PBR emission levels, the emissions from the Liquefaction Plant will not have a detrimental impact to anyone in the surrounding community, including these individuals. Accordingly, it is reasonable for the Commission to conclude that these individuals will not be affected by air emissions from the Liquefaction Plant as a matter of law.

B. Group 2.

The second group of hearing requestors consists of individuals who live inland and north of Quintana Island. These individuals are Laura Jones and Melanie Oldham. In addition, Laura Jones appears to also request a hearing on behalf of an association of which she is a member, Save Our Subdivisions ("SOS"). While these requests for a contested case hearing are filed in the docket for both the Liquefaction Plant's and the Pretreatment Facility's air applications, the content of their requests for hearing only specifically raises concerns regarding the application for the Pretreatment Facility. In addition, Ms. Jones and Ms. Oldham are so far away from the Liquefaction Plant, 5.68 miles and 2.35 miles, respectively, that they cannot demonstrate that they are affected by emissions from the Liquefaction Plant in a manner not common to the general public.[31] In addition, similar to Hearing Requestors in Group 1, discussed above, the concentrations of air emissions from the Liquefaction Project as a whole predicted to occur at the

[30] *See* Dydek Affidavit, stating that the maximum predicted impacts of air contaminants at the Requestors' residences ranged from 0.01% to 1.3% of the applicable NAAQS; 0.07% to 0.17% for the State of Texas Property Line Standards; and 0.000000006% to 2% of the ESLs. Exhibit 2 (Tables for Harold Doty, Christopher Kall and James Kall).

[31] *See* Map, showing the respective location of Melanie Oldham's and Laura Jones' residences relative to the center point of the proposed Liquefaction Plant, attached to the Velasquez Affidavit as Exhibit 1-E.

residences of Ms. Jones and Ms. Oldham are a trace percent of the applicable standard.[32] Accordingly, Ms. Jones' and Ms. Oldham's requests for hearing, as well as the request on behalf of SOS, should be denied.

C. Group 3.

The third group of hearing requestors is a set of individuals who filed their requests for a hearing during the first comment period for this application and at a time when the proposed location of the Pretreatment Facility was on County Road 792 ("CR 792 Site"). These persons are Robin Rio, Anthony Zuma, Diana Stokes, Kathy Davis, Dan Callahan, and Floyd Winkler on behalf of the Commodore Cover Improvement District ("CCID"). The requests for hearing in this group were filed in the docket for the Liquefaction Plant at a point in time when the Pretreatment Facility was to be located at the CR 792 Site and raise concerns primarily related to the former CR 792 Site. These persons will be referred to as the "CR 792 Requestors."

Due to concerns expressed by residents who lived in close proximity to the proposed CR 792 Site, FLNG found an alternate site near CR 690 and State Highway 332 ("CR 690 Site"). On or about July 18, 2012, FLNG abandoned its application for the CR 792 Site and filed a new application for the CR 690 Site. The CR 792 Requestors recite facts that have since changed and fail to demonstrate how they will be affected by emissions from the Liquefaction Plant. Just as the Executive Director determined the comments of these persons were rendered moot by the proposed new location for the Pretreatment Facility in his Response to Comments,[33] the requests

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[32] *See* Dydek Affidavit, stating that the maximum predicted impacts of air contaminants at the Requestors' residences ranged from 0.01% to 1.4% of the applicable NAAQS; 0.07% to 0.22% for the State of Texas Property Line Standards; and 0.00000001% to 1.6% of the ESLs. Exhibit 2 (Tables for Melanie Oldham and Laura Jones).

[33] *See* Executive Director's Response to Public Comment at 22.

for hearing are rendered moot for the same reason. In addition, all of the CR 792 Requestors reside more than 5 miles from the Liquefaction Plant; therefore, they cannot demonstrate that they are impacted by the emissions from the Liquefaction Plant in a manner not common to the general public.[34] Accordingly, these requests for hearing are not valid and should be denied.

IV. Analysis of Hearing Requests.

A. Legal Authority.

The Commission may grant a request for a contested case hearing if the request is made by an affected person, is timely-filed, is in writing, lists all relevant and material disputed issues of fact that were raised, but not withdrawn, during the public comment period, that are the basis for the hearing request, and provides such other information specified in the public notice of the application.[35] An affected person is a person who has a "personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the administrative hearing."[36] In determining whether an individual is an affected person, the Commission considers the following:

1. Whether the interest claimed is one protected by the law under which the application will be considered;
2. Distance restrictions or other limitations imposed by law on the affected interest;
3. Whether a reasonable relationship exists between the interest claimed and the activity regulated;
4. The likely impact of the regulated activity on the health and safety of the person, and on the use of property of the person;
5. The likely impact of the regulated activities on the use of the impacted natural resource by the person; and
6. For governmental entities, their statutory authority over or interest in the issues relevant to the application.[37]

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[34] *See* Map, Attached to the Velasquez Affidavit as Exhibit 1-F.

[35] TEX WATER CODE §5.556(d); 30 TEX. ADMIN. CODE §55.201(d).

[36] TEX WATER CODE § 5.115(a); 30 TEX. ADMIN. CODE §55.203(a).

[37] 30 TEX. ADMIN. CODE §55.203(c).

An interest common to the general public does not qualify as a personable justiciable interest.[38]

A request for a contested hearing from an affected person must be 1) in writing, 2) filed timely with the Chief Clerk of the Commission, and 3) may not be based on any issues that were raised solely in a public comment withdrawn by the commentor in writing or by filing a withdrawal letter with the chief clerk prior to the filing of the Executive Director's Response to Comment.[39] Additionally, the contested hearing request must include the following information:

1. The requestor's contact information or, if the requestor is a representative of a group or association, the requestor must identify who shall be responsible for receiving all official communication and documents for the group and provide the relevant contact information related thereto;
2. Identify the requestor's justiciable interest;
3. Specifically explain the requestor's location and distance relative to the proposed facility;
4. Describe how and why the requestor believes he or she will be adversely affected by the proposed facility or activity in a manner not common to members of the general public;
5. List all relevant and material disputed issues of fact raised during the public comment period;
6. To the extent possible, specify any of the executive director's responses to comments that the requestor disputes and factual basis of the dispute and list any disputed issues of law or policy; and
7. Provide any other information specified in the public notice of application.[40]

As part of the description of the adverse impacts, the requestor must describe the requestor's use of nearby property and the alleged impact by the proposed facility.[41]

In evaluating affected person status the Commission typically informs its review by reference to a 1 mile "rule of thumb," that is, persons residing outside a 1 mile radius of the plant

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[38] TEX WATER CODE §5.115(a); 30 TEX. ADMIN. CODE §55.203(a).

[39] 30 TEX. ADMIN. CODE §55.201.

[40] *Id.* § 55.201(d).

[41] 30 TEX. ADMIN. CODE §39.411(e)(11)(D).

site will be considered to be affected by the proposed air emissions only in a manner common to that of the general public. In other words, these persons will not be found to be "affected persons" and entitled to a contested case hearing. Indeed, in the context of the evaluation of other requests for hearing the Executive Director has advocated for such a general "rule of thumb." *See, e.g.*, Executive Director's Response to Hearing Requests, *In re Regency Field Services, LLC*, TCEQ Docket No. 2010-0843-AIR at 8 (stating that "distance from the proposed facility is key to the issue whether or not there is a likely impact of the regulated activity on a person's interests (such as the health and safety of the person) and on the use of property of the person" and that "[t]he Executive Director has generally determined that hearing requestors who reside greater than one mile from the facility are not likely to be impacted differently than any other member of the general public.")[42]; *see also Collins v. TNRCC*, 94 S.W.3d 876 (Tex. App.—Austin 2002, no pet.) (appellate court found substantial evidence in the record to support TNRCC's decision to deny a hearing request; the court noted that the hearing requestor lived 1.3 miles from the facility at issue and that evidence before the Commission indicated that the proposed facility was "very unlikely" to adversely affect the hearing requestor). While such a standard is not a hard and fast rule and other factors and criteria will be reviewed in determining whether a person has demonstrated "affected person" status, it is nonetheless one of the criteria that will be reviewed in making such determinations. Accordingly, FLNG offers information

[42] *Accord*, Executive Director's Response to Hearing Requests, *TPCO America Corporation*, TCEQ Docket No. 2010-0280-AIR at 5 (stating that "[t]he ED considers persons residing more than one mile of the proposed facility to be unlikely to be impacted differently from the general public.... Because the requestors reside more than one mile from the proposed facility, they are not likely to be impacted differently than other members of the general public."); Executive Director's Response to Hearing Requests, *Jobe Materials, LP*, TCEQ Docket No. 2007-0491-AIR at 5 (the ED contended in his written response that because none of the hearing requestors resided within one mile of the proposed facility, their requests for hearing should be denied: "As they reside more than 1 mile from the proposed facility, they are not likely to be impacted differently than any other member of the general public.").

where none has been provided or verifies the hearing requestor's location and distance from the proposed Liquefaction Plant in order to allow the Commission to take this factor into account in making its ultimate determination on each request for a contested case hearing.

B. Group 1 – Hearing Requestors who reside or frequent a vacation home on Quintana Island.

Three hearing requestors reside, or frequent a residence on Quintana Island. They are Harold Doty, Christopher Kall and James Kall. All three of these requests for hearing fail because, as a matter of law as recognized by the PBR emission levels, the emissions from the Liquefaction Plant will not have a detrimental impact to the surrounding community, including these requestors. Moreover, even with the conservatism built into the modeling, the levels of emissions predicted to occur at these Hearing Requestors' residences are miniscule percentages of the applicable standards. In addition, these Hearing Requestors are not in the path of the prevailing wind patterns such that emissions from the Plant will disperse towards their residences for any significant period of time. Accordingly, these requests for hearing fail as the hearing requestors cannot show that they will be affected by the emissions from the Liquefaction Plant as a matter of law.

1. Harold Doty's and Christopher Kall's hearing request.

Harold Doty's and Christopher Kall's hearing requests are virtually identical, except for the location of their residences.[43] Mr. Doty states he lives at 111 South Lake Drive, Quintana, Texas. Christopher Kall states that he resides at 2550 Deep Sea Drive, Quintana, Texas.

[43] Mr. Doty's request for hearing was first filed with the Office of Chief Clerk on February 26, 2014, re-filed on March 3, 2014, and submitted again verbally and in writing at the public meeting on March 4, 2014. All three copies of Mr. Doty's request for hearing are identical.

In support of identifying a personal justiciable interest affected by the Liquefaction Plant, both Mr. Doty and Christopher Kall state that their houses are located less than a ½ mile from the center point of the proposed facility. They each state that they will be "adversely affected by the air emissions from the proposed facility in a way not common to the general public by virtue of being closely downwind of the Quintana proposed facility during winter months, when the prevailing winds are from the North." Mr. Doty goes on to state that he "will be breathing any pollutants or other releases from the facility any time the wind is from the North." Christopher Kall makes the specific statement that he "will be breathing any pollutants or other releases from the facility any time the wind is from the Northeast."

According to FLNG's analysis and mapping, Mr. Doty's residence is actually 0.92 miles from the center of the proposed plant site; and Christopher Kall's residence is actually 0.84 miles from the center of the proposed plant site.[44] Accordingly, their residences are almost 1 mile from the center of the proposed Liquefaction Plant, not less than ½ mile as represented by each of them. In addition, Mr. Doty incorrectly notes that he will be impacted when the wind is blowing from the north, but an examination of the map and windrose at Exhibit 1-D to the Velasquez Affidavit shows that the wind must be blowing from the northeast for the emissions from this site to even have a potential impact on him, which rarely occurs. In fact, neither Mr. Doty nor Christopher Kall is downwind from the Liquefaction Plant site based on prevailing wind patterns. Moreover, based upon predictive modeling analysis summarized and referred to in the Dydek Affidavit, the concentrations of air contaminants originating from the Liquefaction Project that would occur at Mr. Doty's and Christopher Kall's residence are only trace amounts. Indeed, at Mr. Doty's residence the maximum predicted air contaminant level compared to a

[44] *See* Map, Exhibit 1-D to the Velasquez Affidavit.

NAAQS was 0.49% of the applicable NAAQS level; and the maximum predicted value at Christopher Kall's residence was 0.89% of the applicable NAAQS level. Similarly, the maximum predicted air contaminant level compared to a State Property Line Standard at both Mr. Doty's and Christopher Kall's residences was 0.16% of the applicable Property Line Standard. Finally, the maximum predicted air contaminant level compared to an ESL at Mr. Doty's and Christopher Kall's residences were 0.62% and 0.70%, respectively, of the applicable ESL.[45]

Moreover, there is simply not a reasonable relationship between the interests Mr. Doty and Christopher Kall claim (that there will be adverse effects from air emissions from the Liquefaction Plant) and the proposed permitted emission levels. As discussed above, FLNG selected electric motors to drive the refrigeration and compression process at the site. As a result, the proposed emissions levels from this plant are so negligible that it is not reasonable to conclude that there will be any off property impact to any person, most certainly not Mr. Doty nor Christopher Kall. Moreover, the permitted emission levels are well below those established for PBRs, which by definition and as a matter of law are considered "insignificant" sources of air contaminants (and, if permitted under a PBR process, would not subject to a contested case hearing request). In fact, the only sources of air emissions at this site, other than fugitives, run intermittently for emergency purposes or during maintenance, startup and shutdown ("MSS") activities.

[45] Dydek Affidavit, Exhibit 2 (Tables for Harold Doty and Christopher Kall). Note that these modeling results are for the combined emissions from the Liquefaction Plant and the Pretreatment Facility; results from solely the Liquefaction Plant would be substantially smaller.

Nor will there be a likely impact of the permitted emission levels on Mr. Doty's or Christopher Kall's health or use of their respective property. Indeed, after evaluating the maximum predicted concentrations of emissions predicted to occur at the location of the residences of the Hearing Requestors, Dr. Dydek concluded that "the Hearing Requestors will not be affected in any way by the emissions from the proposed Freeport LNG Liquefaction Plant."[46] Mr. Doty and Christopher Kall claim they will be impacted by the air emissions from this plant site only during the winter when the air shifts to the North. "Northers" in Texas occur only in the winter and then not very often. Whether viewed separately or together, given the infrequency of wind patterns that would push emissions toward Mr. Doty and Christopher Kall's homes and the infrequency and insignificant amount of intermittent, MSS emissions, and the trace maximum concentrations of air contaminants predicted to occur at their residences, it is not possible for Christopher Kall's or Mr. Doty's health or use of property to be adversely affected by the Liquefaction Plant permitted emissions. Moreover, they cannot demonstrate that they are affected by emissions from this Plant in any manner not common to that of a member of the general public.

2. James Kall's hearing request.

James Kall's request for a contested case hearing states that his mailing address is 5522 Walnut Glen Lane, Rosenberg, Texas 77471. However, he also states that he and his family live at "707 Burnett" on "weekends and holidays." In other words, the residence at which he spends

[46] *Id.* at 19.

time is in the nature of a vacation home. However, James Kall neither owns the residence at 707 Burnett nor any other tract of land or home on Quintana Island.[47]

In support of identifying his personal justiciable interest affected by the Liquefaction Plant, he states that that the residence at 707 Burnett is located approximately 1 mile from the center point of the proposed facility. He also states he will be adversely affected by the air emissions from the proposed facility in a way not common to the general public "by virtue of my close proximity to the proposed facility" and he is "worried that we [his family] will be breathing any pollutants or other releases from the facility."

Although James Kall claims that the residence at 707 Burnett is located approximately 1 mile for the center point of the facility, based upon the analysis and mapping performed by FLNG, 707 Burnett is located over a mile away, from the center point of the facility and is not downwind of the facility based on prevailing wind patterns.[48] James Kall has provided no concrete information to the Commission about how often he and his family frequent this residence, he merely vaguely refers to his family's occupancy of 707 Burnett as "on weekends and holidays." He does not identify how many weekends he and his family frequent this address or what time of year this occurs, nor does he identify which holidays they enjoy at this address. In short, James Kall's reference to his and his family's presence at this address is so vague that the Commission simply cannot determine with any certainty how or whether Mr. Kall and his

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[47] *See* Affidavit of Joseph Patterson, Exhibit 3, stating: "Based upon a thorough and complete search of the official public records documenting the ownership of interests in real property in Brazoria County, Texas, JAMES KALL owns no interest in any parcel of land located in Brazoria County, Texas, the said JAMES KALL having conveyed all interests which he previously may have owned in real property in Brazoria County, Texas, between 2003 and 2011, by documents executed by him, certified copies of which are attached hereto."

[48] *See* Map, Exhibit 1-D to the Velasquez Affidavit.

family will be impacted by emissions from the Liquefaction Plant. In reviewing this hearing request, time of year is significant because the prevailing winds on the Island are generally from the south and southeast and only during short periods of time in the winter months are the winds from the north, and virtually never from the southwest and toward James Kall's vacation home.

Moreover, based upon predictive modeling analysis summarized and referred to in the Dydek Affidavit, the concentrations of air contaminants originating from the Liquefaction Project that would occur at James Kall's residence are only trace amounts. Indeed, at James Kall's residence the maximum predicted air contaminant level compared to a NAAQS was 1.3% of the applicable NAAQS level. Similarly, the maximum predicted air contaminant level compared to a State Property Line Standard at James Kall's residence was 0.17% of the applicable Property Line Standard. Finally, the maximum predicted air contaminant level compared to an ESL at James Kall's residence was 2.0% of the applicable ESL.[49]

Given the infrequency of prevailing winds in the direction of the residence at 707 Burnett and the infrequency of his presence at that address, combined with the insignificant amount of emissions permitted at the Liquefaction Plant (which would be, as a matter of law as set by the PBR requirements, insignificant and, if permitted under a PBR process, would not be subject to a contested case hearing), and the trace maximum concentrations of air contaminants predicted to occur at his residence, James Kall is not an affected person and his request for hearing should be denied.

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[49] Dydek Affidavit, Exhibit 2 (Tables for James Kall). Note that these modeling results are for the combined emissions from the Liquefaction Plant and Pretreatment Facility; results from solely the Liquefaction Plant would be substantially smaller.

C. Group 2: Hearing Requestors who reside inland and north of Quintana Island.

The second group of hearing requestors in this matter consists of two individuals who live north of Quintana Island: Melanie Oldham and Laura Jones. Ms. Jones also appears to request a hearing on behalf of an association of which she is a member, SOS. Neither Melanie Oldham nor Laura Jones nor SOS is entitled to a contested case hearing on the Liquefaction Plant permit application. While these requestors have filed a request for a contested case hearing in the dockets for both the Liquefaction Plant and the Pretreatment Facility permit applications, the hearing requests on their face raise issues only germane to the Pretreatment Facility and not to the Liquefaction Plant.

A hearing requestor cannot establish affected person status with respect to the Liquefaction Plant application by stating concerns about, and potential impact from, the proposed Pretreatment Facility. As discussed above, the two facilities are considered separate facilities with separate permits, and their emissions were combined solely for the purposes of applicability of PSD and NNSR and the modeling for air quality impacts review. Also as discussed above, aggregation of these sites would not have been required had EPA had before it the *Clean Air Project* decision. This being so, an individual seeking to establish that he or she is an affected person with respect to the emissions from the proposed Liquefaction Plant must demonstrate that he or she will be impacted, in a manner not common to the general public, by emissions from the Liquefaction Plant. References to impacts from or concerns regarding the Pretreatment Facility are irrelevant in the context of attempting to establish one's right to a hearing with respect to the Liquefaction Plant permit.

The terms of each of these hearing requests raise issues with respect to the Pretreatment Facility, not the Liquefaction Plant. For that reason alone these requests for hearing should be denied. Nonetheless, FLNG offers this additional analysis which further demonstrates that these requests for hearing should be denied.

1. Melanie Oldham's request for hearing.

Ms. Oldham's request for hearing fails for a number of reasons, the most fundamental of which is that, as noted above, she did not raise any issue of concern relative to the Liquefaction Plant. Ms. Oldham's request focuses entirely on the Pretreatment Facility and fails to provide any specific assertion of potential impact from the Liquefaction Plant. Indeed, Ms. Oldham does not even attempt to identify a personal justiciable interest that will be affected by emissions from the Liquefaction Plant.

Another defect in her request is her failure to specify the distance of her residence relative to the proposed Liquefaction Plant. Ms. Oldham states that she resides at 603 W.7th Street in Freeport but says no more than that relative to the Liquefaction Plant. FLNG has determined through its own analysis and mapping that Ms. Oldham's residence is 2.35 miles away from the Liquefaction Plant.[50] This distance, being well over the 1-mile "rule of thumb" often utilized to identify persons that will not be affected in a manner different from the general public, combined with the extremely low and intermittent emissions levels from the proposed Liquefaction Plant, negate any possible claim by Ms. Oldham that emissions from the Liquefaction Plant will impact her in a manner not common to members of the general public. In short, Ms. Oldham cannot reasonably allege that she will be impacted by emissions from the Liquefaction Plant because her residence is 2.35 miles away from a plant with emissions so low

[50] Exhibit 1-E to the Velasquez Affidavit.

that, as a matter of law under the PBR requirements, would be considered insignificant (and, if permitted through the PBR process, would not be subject to a contested case hearing request). In addition, based upon predictive modeling analysis summarized and referred to in the Dydek Affidavit, the concentrations of air contaminants originating from the Liquefaction Project that would occur at Ms. Oldham's residence are only trace amounts. Indeed, at Ms. Oldham's residence the maximum predicted air contaminant level compared to a NAAQS was 0.60% of the applicable NAAQS level. Similarly, the maximum predicted air contaminant level compared to a State Property Line Standard at her residence was 0.19% of the applicable Property Line Standard. Finally, the maximum predicted air contaminant level compared to an ESL at Ms. Oldham's residence was 1.5% of the applicable ESL.[51]

Ms. Oldham simply cannot demonstrate that she is impacted by the emissions from the Liquefaction Plant in any manner that is not common to a member of the general public and her request for a contested case hearing on the Liquefaction Plant should be denied.

2. Laura Jones' request for hearing.

Laura Jones' request for contested case hearing fails for the same reasons as Ms. Oldham's. Ms. Jones filed a request in the docket of the proceeding on the Liquefaction Plant but she did not raise any issue of concern relative to that plant. Like Ms. Oldham, Ms. Jones' request focuses entirely on the Pretreatment Facility and fails to provide any specific assertion of potential impact from the Liquefaction Plant. Indeed, Ms. Jones does not even attempt to identify a personal justiciable interest that will be affected by emissions from the Liquefaction Plant.

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[51] Dydek Affidavit, Exhibit 2 (Tables for Melanie Oldham). Note that these modeling results are for the combined emissions from the Liquefaction Plant and Pretreatment Facility; results from solely the Liquefaction Plant would be substantially smaller.

Another defect in her request is her failure to specify her residence distance relative to the proposed Liquefaction Plant. Ms. Jones states that her address is 190 Sky Sail Road in Freeport, but she fails to say where this is in relation to the plant site, either in terms of direction or in terms of distance. FLNG has determined through its own analysis and mapping that Ms. Jones' residence is 5.68 miles away from the Liquefaction Plant site, and to the northeast of the site.[52] This long distance, particularly when combined with prevailing wind patterns (which are seldom out of the southwest), and the extremely low and intermittent emissions levels from the proposed Liquefaction Plant, negate any possible claim by Ms. Jones that emissions from the Liquefaction Plant will impact her in a manner not common to members of the general public. In short, Ms. Jones cannot reasonably allege that she will be impacted by emissions from the Liquefaction Plant because her residence is 5.68 miles away from a plant with emissions so low that, as a matter of law under the PBR requirements, would be considered insignificant (and, if permitted under the PBR process, would not be subject to contested case hearing requests).

Indeed, based upon predictive modeling analysis summarized and referred to in the Dydek Affidavit, the concentrations of air contaminants originating from the Liquefaction Project that would occur at Laura Jones's residence are only trace amounts. At Ms. Jones' residence, the maximum predicted air contaminant level compared to a NAAQS was 1.4% of the applicable NAAQS level. Similarly, the maximum predicted air contaminant level compared to a State Property Line Standard at Ms. Jones' residence was 0.22% of the applicable Property

[52] Exhibit 1-E to the Velasquez Affidavit.

Line Standard. Finally, the maximum predicted air contaminant level compared to an ESL at Ms. Jones' residence was 1.6% of the applicable ESL.[53]

Ms. Jones simply cannot demonstrate that she is impacted by the emissions from the Liquefaction Plant in any manner that is not common to a member of the general public and her request for a contested case hearing on the Liquefaction Plant should be denied.

3. Ms. Jones request for hearing on behalf of SOS.

Laura Jones appears to be requesting a hearing not only on her own behalf but also on behalf of SOS. Her request for hearing on behalf of SOS is embedded within the same letter as her own request for hearing; accordingly, the association's request fails for the same reasons that Laura Jones' request fails; that is, on its face the request does not raise any issue of concern related to the Liquefaction Plant. Instead it relates entirely to concerns with the proposed Pretreatment Facility, and as such it cannot serve as a valid request for hearing by SOS with respect to the Liquefaction Plant.

Moreover, in order to obtain associational standing, one or more of an association's members would otherwise have standing to request a hearing in his/her own right.[54] The only member of SOS purporting to seek a contested case hearing on SOS' behalf is Ms. Jones. As demonstrated above, however, Ms. Jones lacks standing to request a contested case hearing due

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[53] Dydek Affidavit, Exhibit 2 (Tables for Laura Jones). Note that these modeling results are for the combined emissions from the Liquefaction Plant and Pretreatment Facility; results from solely the Liquefaction Plant would be substantially smaller.

[54] *See* 30 TEX. ADMIN. CODE § 55.205(a).

to her failure to qualify as an affected person. Because Ms. Jones lacks standing to request a hearing, so too does SOS.[55]

Another fundamental defect in SOS' claim to associational standing is the fact that Ms. Jones has failed to provide any detail whatsoever about SOS or its relationship to her or to the issues involved in this permit application. Ms. Jones' cursory reference to SOS in her request for hearing fails to address basic issues such as her alleged authority to request a hearing on SOS' behalf and the extent to which the interests that she seeks to advance are consistent with the interests of the group as a whole, whatever those unidentified group interests may be. Indeed, she has provided no information in her hearing request to establish SOS' purported associational standing. *Cf. Texas Ass'n of Business v. Texas Air Control Board*, 852 S.W.2d 440, 446 (Tex. 1993) (a group attempting to establish associational standing must allege facts that affirmatively demonstrate the court's jurisdiction to hear the claim). FLNG's Response to Hearing Requests and Request for Reconsideration with respect to the Pretreatment Facility discusses in depth all of the flaws in Ms. Jones' attempt to request a hearing on SOS' behalf, and FLNG incorporates those arguments as if fully stated herein.

For all of the above reasons, the Commission should deny the hearing request on behalf of SOS.

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[55] *See South Texas Water Authority v. Lomas*, 223 S.W.3d 304, 308 (Tex. 2007) (making clear that failure to satisfy any prong of the three-part associational standing test results in a lack of standing on the part of the group; because group member failed to demonstrate individual standing to contest a water-supply contract, the group itself lacked associational standing to sue on behalf of its members).

D. Group 3: Hearing requestors who filed requests for hearing on the Liquefaction Plant prior to moving the Pretreatment Facility.

The third group consists of hearing requests that are clearly without merit and moot because their concerns relate to the former location of the Pretreatment Facility, whose proposed location long ago moved.[56] While it may not be necessary to address these requests for hearing at all, in an abundance of caution, FLNG addresses them here because the Chief Clerk's online database still maintains the notation that these persons requested a contested case hearing for the Liquefaction Plant. The requests in this category were filed by Robin Rio, Anthony Zuma, Diana Stokes, Kathy Davis, Dan Callahan, and Floyd Winkler on behalf of the Commodore Cove Improvement District ("CCID"). Their requests for hearing should be denied because any concerns raised with respect to the former CR 792 Site are now moot, given FLNG's decision to move the proposed site location to the CR 690 site. The Executive Director has already reached this conclusion in his Response to Public Comment: "The new proposed location for the Pretreatment Facility renders the specific concerns of these comments regarding a location on County Road 792 moot."[57] There is no reason to convene a contested case hearing to consider issues related to a proposed facility site that is no longer even being contemplated by FLNG.

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[56] The requests in this group were filed during the first comment period for the Liquefaction Plant permit application. At that time, the proposed location of the Pretreatment Facility was on CR 792 (the "CR 792 Site"). Due to concerns expressed by residents who live near the CR792 Site, FLNG found an alternate site near CR 690 and State Highway 332 (the "CR 690 Site"). In July 2012, FLNG abandoned its application for the CR 792 Site and filed a new application for the CR 690 Site. The requests for hearing in this third category were filed in the docket for the Liquefaction Plant when the Pretreatment Facility was to be located at the CR 792 Site, and those hearing requests raise concerns solely related to the former CR 792 Site.

[57] Executive Director's Response to Public Comment at 22.

Moreover, Mr. Zuma only requests that the Federal Energy Regulatory Commission ("FERC") – not TCEQ – hold a hearing; he makes no express request that the TCEQ convene a hearing on any matter. Mr. Winkler only requests a "formal hearing" and Mr. Callahan requests a "full public hearing." Accordingly, these three requests fail because the requestor failed to request a contested case hearing on any application before the TCEQ.

Finally, the requests in this category were filed by persons living over 5.5 miles away from the Liquefaction Plant site.[58] (Ms. Stokes failed to provide her address so her distance from the site could not be determined, but her failure to provide an address is itself a basis upon which her hearing request should be denied.) Individuals living over 5.5 miles away from a low-emitting facility such as the Liquefaction Plant cannot demonstrate affected person status. Indeed, none of the hearing requestors in this group even assert that they might be affected by emissions from the Liquefaction Plant.

Accordingly, the Commission should deny the hearing requests filed by Robin Rio, Anthony Zuma, Diana Stokes, Kathy Davis, Dan Callahan, and Floyd Winkler.

PRAYER FOR RELIEF

WHEREFORE, PREMISES CONSIDERED, Freeport LNG Development, L.P., respectfully requests that the Honorable Commissioners of the Texas Commission on Environmental Quality deny all requests for contested case hearing filed in this matter. Furthermore, Freeport LNG Development, L.P., respectfully requests that the Honorable Commissioners approve the issuance of Air Quality Permit Nos. 100114, PSDTX 1282 and N150.

[58] Exhibit 1-F to the Velasquez Affidavit

In the event that the Commission determines, for purposes of this proceeding, that any of the hearing requestors is an affected person entitled to request a contested case hearing, Freeport LNG Development, L.P. presents in attached Exhibit 4 an analysis of the issues that may constitute relevant and material disputed issues of fact upon which a contested case hearing may be held. In addition, should the Commission decide to grant one or more requests for hearing, Freeport LNG Development, L.P. recommends that the contested case hearing last no longer than 3 months from the preliminary hearing to the proposal for decision and that the period of time from the referral to SOAH to the preliminary hearing be no more than 45 days.

Respectfully Submitted,

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ATTORNEYS FOR FREEPORT LNG DEVELOPMENT, L.P.

CERTIFICATE OF SERVICE

I certify that a true and correct copy of this Response to Hearing Requests was served on each of the persons listed on the Mailing List attached hereto, in accordance with TCEQ rules, on June 5, 2014:

Celina Romero

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DOCKET NO. 2014-0691-AIR

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Via U.S. Mail

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Via U.S. Mail

EXHIBIT 1

TCEQ DOCKET NO. 2014-0691-AIR

APPLICATION BY FREEPORT LNG DEVELOPMENT, L.P., LIQUEFACTION PLANT AIR QUALITY PERMIT NOS. 100114, PSDTX 1282 AND N150	§ § § § §	**BEFORE THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

AFFIDAVIT OF RUBEN I. VELASQUEZ, P.E.

State of Texas §
County of Travis §

Before me, the undersigned Notary Public in and for Travis County Texas, personally appeared RUBEN I. VELASQUEZ, P.E., the affiant, whose identity is known to me. After I administered an oath, affiant testified as follows:

1. My name is Ruben I. Velasquez. I am over 18 years of age, of sound mind, and capable of making this affidavit. The facts in this affidavit are within my personal knowledge and are true and correct.

2. I am a registered Professional Engineer with the Texas Board of Professional Engineers and I hold the position of Senior Engineer, Air Quality at Atkins North America, Inc. ("Atkins"), a design, engineering and project management consulting company. My experience includes more than 25 years of work in the field of air quality, including experience with air permitting, air quality evaluations, and emissions calculations. The use of "Atkins" in this affidavit may include Atkins and its subconsultants that performed work on behalf of Atkins.

3. I have prepared this Affidavit in support of Applicant Freeport LNG Development, L.P.'s ("FLNG") Response to Hearing Requests on FLNG's air quality permit applications for its proposed Liquefaction Plant. The Liquefaction Plant along with FLNG's proposed Pretreatment Facility will be located in the Freeport, Texas area and will be referred to herein as the "Liquefaction Project". On behalf of FLNG, Atkins prepared the air quality permit applications for FLNG's proposed Liquefaction Project.

4. The Liquefaction Project is an integrated project with two plant sites for which separate air quality permits will be issued for each plant site in accordance with 30 Tex. Admin. Code § 116.143(1). In order to be consistent with the U.S. Environmental Protection Agency's ("EPA's") aggregation of the two sites,[1] FLNG requested the Texas Commission on

[1] EPA required aggregation of the two plant sites for purposes of the GHG application; accordingly, to be consistent with the determination by EPA for the GHG application, FLNG requested TCEQ to combine the emissions for the two plant sites for PSD and NNSR applicability and air impacts modeling reviews in the applications for the non-GHG emissions.

Environmental Quality ("TCEQ") to combine the proposed emissions from the Liquefaction Plant and the Pretreatment Facility in the application review process and evaluate them together for purposes of applicability of Prevention of Significant Deterioration ("PSD") and Nonattainment New Source Review ("NNSR") and in the modeling for air quality impacts review. Accordingly, under my direction, Atkins performed air dispersion modeling to determine the maximum off-property impacts (*i.e.* ground level airborne concentrations) of the combined air contaminants to be emitted from the proposed Freeport LNG Liquefaction Project. This modeling was conservative because, among other things, it took into account combined emissions from the proposed Liquefaction Plant and the Pretreatment Facility, rather than the emissions from each individual site.

5. The proposed Liquefaction Project will emit five air contaminants that have a national ambient air quality standard ("NAAQS"): carbon monoxide ("CO"), nitrogen dioxide ("NO_2"), sulfur dioxide ("SO_2"), particulate matter less than 10 microns in diameter ("PM_{10}"), and particulate matter less than 2.5 microns in diameter ("$PM_{2.5}$"). The Liquefaction Project will also emit three air contaminants that have State of Texas standards: SO_2, hydrogen sulfide ("H_2S"), and sulfuric acid mist ("H_2SO_4"). Non-criteria air contaminants to be emitted from the Liquefaction Project include ammonia and various volatile organic compounds ("VOCs").

6. TCEQ air quality permits are "pre-construction" permits. Therefore, computer-based methods are used to predict the impacts of emissions that will occur once the plants are built. This type of computer modeling is referred to as air dispersion modeling. Air dispersion modeling is a well-accepted method by which off-property air concentrations of chemicals emitted from emission sources are predicted. The model used by permit applicants seeking air quality permits from the TCEQ is called AERMOD, and this is the model that was used by Atkins to perform the air dispersion modeling discussed in paragraphs 7-12 below. This model was developed and tested by the U.S. Environmental Protection Agency.

7. The air modeling analysis involved the following steps: the Significance Analysis, the PSD NAAQS Analysis, and the PSD Increment Analysis. Under my direction, the Significance Analysis was conducted to determine if the emissions increases from the project cause a significant impact upon the area surrounding the facilities, with the term "significant" being defined by ambient concentration thresholds referred to as the Significant Impacts Levels ("SIL"). *See* 40 CFR § 51.165(b). The Significance Analysis addressed the predicted impacts from emissions of CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$. Because maximum predicted concentrations were all less than the corresponding SILs for CO, NO_2, SO_2, and PM_{10}, no further analysis was required for those pollutants. A PSD NAAQS and Increment Analysis was required for the $PM_{2.5}$ 24-hour and annual averaging periods because modeled impacts indicated that emissions of $PM_{2.5}$ would result in maximum predicted concentrations exceeding the PSD NAAQS and Increment forms of the SIL for the 24-hour and annual averaging periods. Therefore, under my direction, Atkins performed a Full Impact Analysis, consisting of a PSD NAAQS Analysis and a PSD Increment Analysis, for the $PM_{2.5}$ 24-hour and annual averaging periods. The results of these analyses showed that maximum predicted concentrations at all significant receptors within the radius of impact were below the PSD NAAQS Standard and the PSD Increment Standard for the $PM_{2.5}$ 24-hour and annual averaging periods. Therefore, compliance with the PSD NAAQS and the PSD Increment standards was demonstrated.

8. In addition, under my direction, Atkins performed a State Property Line Analysis. This involved modeling of site-wide SO_2, H_2S, and H_2SO_4 emissions from the Pretreatment Facility and the Liquefaction Plant to demonstrate compliance with State Property Line Standards. The results of this analysis were that maximum predicted concentrations were less than State Property Line Standards, meaning that compliance with the standard was demonstrated and no further analysis was required.

9. Under my direction, Atkins also performed a State Health Effects evaluation, wherein site-wide n-hexane, toluene, p-xylene, benzene, isobutene, n-butane, isopentane, n-pentane, and ammonia emissions from the Pretreatment Facility and the Liquefaction Plant were evaluated using the flowchart in the Modeling and Effects Review Applicability (MERA) guidance from the TCEQ Toxicology Division. Using Step 11 of the MERA flowchart, the maximum predicted concentrations for benzene, isobutene, n-butane, isopentane, n-pentane, and ammonia emissions were compared to the appropriate effects screening levels ("ESLs"). The results of this analysis showed that maximum predicted concentrations for these constituents were less than their respective ELS, meaning that no further analysis was required.

10. The air dispersion modeling discussed in paragraphs 7-9 was conducted in accordance with standard and accepted modeling protocols. The modeling results were reviewed and approved by the TCEQ Air Dispersion Modeling Team, as shown by the November 20, 2013 Air Quality Analysis Audit Memo attached hereto as Exhibit 1-A.

11. Under my direction, Atkins subsequently performed air modeling analysis to determine impacts of air contaminants emitted from the proposed Liquefaction Plant at the following individual Hearing Requestors' residences: Laura Jones, Melanie Oldham, James Kall, Christopher Kall, and Harold Doty. A true and correct copy of the results of this analysis is attached hereto as Exhibit 1-B. Again, this analysis was conservative because it took into account combined emissions from both the proposed Liquefaction Plant and the proposed Pretreatment Facility, as opposed to emissions from each plant individually. This analysis was based on the modeling work described in paragraphs 7-10 above which, as stated above, was reviewed and approved by TCEQ's Air Dispersion Modeling Team. That air dispersion modeling generated a receptor grid spreading across a defined local geographical area, consisting of many individual points where potential impacts could be assessed. To analyze potential impacts at individual Hearing Requestors' residences for NAAQS and State Property Line values, the particular receptor points closest to each residence were located and the predicted values modeled for those points were determined. For ESL values, the basic underlying modeling data that had previously been submitted to and approved by TCEQ staff was used to determine the predicted values at the receptor points closest to each residence identified using a ratio technique. This technique used a unit emission rate to determine if the maximum contribution from each permitted source when added together, independent of time and space, could exceed an ESL at the receptor point closest to the nearest residence. This is a conservative procedure since the maximum concentration from all sources modeled concurrently cannot be more than the sum of the maximum concentration from each source modeled separately. All of the modeling for impact at individual Hearing Requestors' residences was conducted in accordance with standard and accepted modeling protocols.

12. The airborne air concentrations predicted by the air dispersion modeling referenced above are conservative; that is, they likely over-predict the levels of air contaminants that could actually occur in the vicinity of the proposed Freeport LNG Liquefaction Plant and/or at the residences of the Hearing Requestors. For example, it was assumed that the maximum emissions would occur during the hours in which meteorological conditions least favor the dispersion of those air contaminants.

13. The results of the air dispersion modeling referred to in paragraphs 7-12 above were provided to Dr. Thomas Dydek for his use in analyzing the impacts of emissions from FLNG's Liquefaction Project.

14. In addition, Atkins prepared, under my direction, (a) an "Area Map of Facilities" showing the overall layout of the Liquefaction Project, (b) an "Area Map of Proposed Liquefaction Plant" showing the distance between the proposed Liquefaction Plant and the residences of Hearing Requestors Christopher Kall, Harold Doty, and James Kall, (c) an "Area Map of Proposed Liquefaction Plant" showing the distance between the proposed Liquefaction Plant and the residences of Hearing Requestors Melanie Oldham and Laura Jones, and (d) an "Area Map of Proposed Liquefaction Plant" showing the distance between the proposed Liquefaction Plant and the residences of Hearing Requestors Dan Callahan, Floyd Winkler, Anthony Zuma, Robin Rio, and Kathy Davis. True and correct copies of those maps are attached hereto as Exhibits 1-C through 1-F, respectively.

15. I obtained the Hearing Requestors' addresses from information that they provided in their hearing requests, available from the TCEQ docket for this proceeding. Under my direction Atkins mapped those addresses, and made the distance measurements shown on those maps, using the ArcGIS software program licensed by Environmental Systems Research Institute. Under my direction Atkins also caused wind roses to be prepared for inclusion on those maps, which are based on meteorological data maintained by TCEQ related to the Angleton Brazoria Airport Surface Station, obtained from the TCEQ website.

Ruben I. Velasquez, P.E.

Sworn and subscribed before me by Ruben I. Velasquez on June 5, 2014.

Notary Public in and for the State of Texas

My commission expires: 06/30/15

ROSIE LANGENFELD
Notary Public, State of Texas
My Commission Expires
June 30, 2015

TCEQ Interoffice Memorandum

To: Sean O'Brien
Combustion/Coatings Section

Thru: Daniel Menendez, Team Leader
Air Dispersion Modeling Team (ADMT)

From: Matthew Kovar
ADMT

Date: November 20, 2013

Subject: Air Quality Analysis Audit – Freeport LNG Development LP (RN106481500)

1. Project Identification Information

Permit Application Number: 104840
NSR Project Number: 181065
ADMT Project Number: 4069
NSRP Document Number: 484604
County: Brazoria
ArcReader Published Map: \\tceq4apmgisdata\GISWRK\APD\MODEL PROJECTS\4069\4069.pmf

Air Quality Analysis: Submitted by Atkins North America, Inc., July 2013, on behalf of Freeport LNG Development LP. Additional information was submitted August and October, 2013.

2. Report Summary

The air quality analysis (AQA) is acceptable for all review types and pollutants. The results are summarized below.

A. De Minimis analysis

A De Minimis analysis was initially conducted to determine if a full impacts analysis would be required. The De Minimis analysis modeling results indicate that $PM_{2.5}$ exceeds the respective de minimis concentrations and requires a full impacts analysis. The De Minimis analysis modeling results for PM_{10} and NO_2 indicated that the project is below the respective de minimis concentrations and no further analysis is required.

The justification for selecting the EPA's interim 1-hr NO_2 De Minimis level was based on the assumptions underlying EPA's development of the 1-hr NO_2 De Minimis level. As explained in EPA guidance memoranda[1], the EPA

[1] www.epa.gov/nsr/documents/20100629no2guidance.pdf

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believes it is reasonable as an interim approach to use a De Minimis Level that represents 4% of the 1-hr NO_2 NAAQS.

The applicant provided an evaluation of ambient $PM_{2.5}$ monitoring data, consistent with draft EPA guidance for $PM_{2.5}$[2], for using the $PM_{2.5}$ De Minimis levels. If the monitoring data shows that the difference between the $PM_{2.5}$ NAAQS and the monitored $PM_{2.5}$ background concentrations in the area is greater that the $PM_{2.5}$ De Minimis level, then the proposed project with predicted impacts below the De Minimis level would not cause or contribute to a violation of the $PM_{2.5}$ NAAQS and does not require a full impacts analysis. See the discussion below in the air quality monitoring section for additional information on the evaluation of ambient $PM_{2.5}$ monitoring data.

While the De Minimis levels for both the NAAQS and increment are identical for $PM_{2.5}$ in the table below, the procedures to determine significance (that is, predicted concentrations to compare to the De Minimis levels) are different. This difference occurs because the NAAQS for $PM_{2.5}$ are statistically-based, but the corresponding increments are exceedance-based.

Table 1. Modeling Results for PSD De Minimis Analysis in Micrograms Per Cubic Meter (µg/m³)

Pollutant	Averaging Time	GLCmax (µg/m³)	De Minimis (µg/m³)
PM_{10}	24-hr	4.95	5
PM_{10}	Annual	0.88	1
$PM_{2.5}$ (NAAQS)	24-hr	4.5	1.2
$PM_{2.5}$ (NAAQS)	Annual	0.76	0.3
$PM_{2.5}$ (Increment)	24-hr	4.95	1.2
$PM_{2.5}$ (Increment)	Annual	0.88	0.3
NO_2	1-hr	4.64	7.5
NO_2	Annual	0.49	1

The 24-hr $PM_{2.5}$ (NAAQS) GLCmax is the highest five-year average of the maximum predicted 24-hr average concentrations determined for each receptor across five years of meteorological data. The annual $PM_{2.5}$

[2]www.epa.gov/ttn/scram/guidance/guide/Draft_Guidance_for_PM25_Permit_Modeling.pdf

(NAAQS) GLCmax is the highest five-year average of the maximum predicted annual average concentrations determined for each receptor across five years of meteorological data.

The 1-hr NO_2 GLCmax is the highest five-year average of the maximum predicted 1-hr average concentrations determined for each receptor across five years of meteorological data.

The GLCmax for all other pollutants and averaging times are the maximum predicted concentrations associated with five years of meteorological data.

B. Air Quality Monitoring

The De Minimis analysis modeling results indicate that PM_{10} and NO_2 are below their respective monitoring significance levels.

Table 2. Modeling Results for PSD Monitoring Significance Levels

Pollutant	Averaging Time	GLCmax (µg/m³)	Significance (µg/m³)
PM_{10}	24-hr	4.95	10
NO_2	Annual	0.49	14

The GLCmax are the maximum predicted concentrations associated with five years of meteorological data.

The applicant evaluated ambient $PM_{2.5}$ monitoring data to satisfy the requirements for the pre-application air quality analysis.

Background concentrations for $PM_{2.5}$ were obtained from the EPA AIRS monitor 482010058 located at 7210 1/2 Bayway Dr., Baytown, Harris County. The three-year average (2010-2012) of the 98th percentile of the annual distribution of the 24-hr average concentrations was used for the 24-hr value (21 µg/m³). The three-year average (2010-2012) of the annual average concentrations was used for the annual value (11.1 µg/m³). The use of this monitor is reasonable based on the applicant's analysis of county emissions, population, and a quantitative review of emissions sources in the surrounding area of the monitor site relative to the project site.

C. National Ambient Air Quality Standard (NAAQS) Analysis

The De Minimis analysis modeling results indicate that $PM_{2.5}$ exceeds the respective de minimis concentrations and requires a full impacts analysis. The full NAAQS modeling results indicate the total predicted concentrations will not result in an exceedance of the NAAQS.

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Table 3. Total Concentrations for PSD NAAQS (Concentrations > De Minimis)

Pollutant	Averaging Time	GLCmax (µg/m³)	Background (µg/m³)	Total Conc. = [Background + GLCmax] (µg/m³)	Standard (µg/m³)
$PM_{2.5}$	24-hr	10.63	22	32.63	35
$PM_{2.5}$	Annual	2.35	9	11.35	12

The 24-hr $PM_{2.5}$ GLCmax is the highest five-year average of the 98th percentile of the annual distribution of the maximum predicted 24-hr average concentrations determined for each receptor across five years of meteorological data. The annual $PM_{2.5}$ GLCmax is the highest five-year average of the maximum predicted annual average concentrations determined for each receptor across five years of meteorological data.

Background concentrations for $PM_{2.5}$ were obtained from the EPA AIRS monitor 483550025 located at 902 Airport Blvd., Corpus Christi, Nueces County. The three-year average (2008, 2009, and 2012) of the 98th percentile of the annual distribution of the 24-hr average concentrations was used for the 24-hr value. The three-year average (2008, 2009, and 2012) of the annual average concentrations was used for the annual value. The years 2010 and 2011 do not contain a sufficient number of samples to be complete, but the applicant evaluated monitoring data for years 2008 and 2009 for this monitor and showed that the monitor values were comparable. The use of this monitor is a reasonable representation of the current air quality levels of $PM_{2.5}$ associated with non-industrial emission sources near the project site. In addition, the monitor is located near the industrial emission sources of the Corpus Christi ship channel. Lastly, industrial emission sources of $PM_{2.5}$ located near the project site were included in the model.

The applicant performed an analysis on secondary $PM_{2.5}$ formation as part of the PSD AQA. The applicant evaluated the project emissions of $PM_{2.5}$ precursor emissions (NO_x and SO_2). The project will result in a proposed increase of NO_x emissions greater than 40 tons per year (tpy) and a proposed increase of SO_2 emissions less than 40 tpy.

Since the project SO_2 emissions are less than the $PM_{2.5}$ precursor significant emission rate (SER) for SO_2, significant secondary $PM_{2.5}$ formation due to the proposed SO_2 emissions is not expected. Significant secondary formation of $PM_{2.5}$ is not expected based on the following information:

- The predicted primary $PM_{2.5}$ impacts fall below the respective De Minimis levels approximately two kilometers (km) from the project sources.

- The predicted NO_2 impacts are also below their respective De Minimis levels.
- Secondary $PM_{2.5}$ formation occurs as a result of chemical transformations that occur in the atmosphere gradually over time and only a portion of the NO_x emissions would be affected. Furthermore, secondary $PM_{2.5}$ formation from NO_x is unlikely to overlap in time or space with nearby maximum primary $PM_{2.5}$ impacts associated with the project sources.

Freeport LNG Development LP is located in Brazoria County, which is part of the Houston-Galveston-Brazoria ozone non-attainment area. Therefore, an ozone analysis is not required as part of the AQA.

D. Increment Analysis

The De Minimis analysis modeling results indicate that $PM_{2.5}$ exceeds the respective de minimis concentrations and required a PSD increment analysis.

Table 4 .Results for PSD Increment Analysis

Pollutant	Averaging Time	GLCmax (µg/m³)	Increment (µg/m³)
$PM_{2.5}$	24-hr	4.88	9
$PM_{2.5}$	Annual	0.89	4

The 24-hr GLCmax is the maximum predicted high, second high (H2H) concentration associated with five years of meteorological data. The annual GLCmax is the maximum predicted concentration associated with five years of meteorological data.

E. Additional Impacts Analysis

The applicant performed an Additional Impacts Analysis as part of the PSD AQA. The applicant conducted a growth analysis and determined that population will not significantly increase as a result of the proposed project. The applicant conducted a soils and vegetation analysis and determined that all evaluated criteria pollutant concentrations are below their respective secondary NAAQS. The applicant meets the Class II visibility analysis requirement by complying with the opacity requirements of 30 TAC 111. The Additional Impacts Analyses are reasonable and possible adverse impacts from this project are not expected.

The ADMT evaluated predicted concentrations from the proposed site to determine if emissions could adversely affect a Class I area. The nearest

Class I area, Caney Creek Wilderness, is located approximately 610 km from the proposed site.

The H_2SO_4 24-hr maximum predicted concentration of 0.13 µg/m³ occurred along the northern property line. The H_2SO_4 24-hr maximum predicted concentration occurring at the edge of the receptor grid, approximately 11 km from the proposed sources, in the direction of the Caney Creek Wilderness Class I area is 0.006 µg/m³. The Caney Creek Wilderness Class I area is an additional 599 km from the edge of the receptor grid. Therefore, emissions of H_2SO_4 from the proposed project are not expected to adversely affect the Caney Creek Wilderness Class I area.

The predicted concentrations of PM_{10}, $PM_{2.5}$, NO_2, and SO_2 for all averaging times, are all less than de minimis levels at a distance of approximately 2 km from the proposed sources in the direction of Caney Creek Wilderness Class I area. Caney Creek Wilderness is an additional 608 km from the location where the predicted concentrations of PM_{10}, $PM_{2.5}$, NO_2, and SO_2 for all averaging times are less than de minimis. Therefore, emissions from the proposed project are not expected to adversely affect the Caney Creek Wilderness Class I area.

F. Minor Source NSR and Air Toxics analysis

Table 5. Site-wide Modeling Results for State Property Line

Pollutant	Averaging Time	GLCmax (µg/m³)	Standard (µg/m³)
SO_2	1-hr	4.34	1021
H_2SO_4	1-hr	0.33	50
H_2SO_4	24-hr	0.13	15
H_2S	1-hr	0.86	108

The justification for selecting the EPA's interim 1-hr SO_2 De Minimis level was based on the assumptions underlying EPA's development of the 1-hr SO_2 De Minimis level. As explained in EPA guidance memoranda[3], the EPA believes it is reasonable as an interim approach to use a De Minimis Level that represents 4% of the 1-hr SO_2 NAAQS.

Table 6. Modeling Results for Minor NSR De Minimis

Pollutant	Averaging Time	GLCmax (µg/m³)	De Minimis (µg/m³)
SO_2	1-hr	4.34	7.8

[3] www.epa.gov/region07/air/nsr/nsrmemos/appwso2.pdf

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Pollutant	Averaging Time	GLCmax (µg/m³)	De Minimis (µg/m³)
SO_2	3-hr	3	25
SO_2	24-hr	1.67	5
SO_2	Annual	0.39	1
CO	1-hr	550	2000
CO	8-hr	325	500

The GLCmax are the maximum predicted concentrations associated with one year of meteorological data.

Table 7. Minor NSR Site-wide Modeling Results for Health Effects

Pollutant & CAS#	Averaging Time	GLCmax (µg/m³)	ESL (µg/m³)
Ammonia 7664-41-7	1-hr	113	170
Benzene 71-43-2	1-hr	0.06	170
Benzene 71-43-2	Annual	0.004	4.5
Butane, n- 106-97-8	1-hr	93	66000
Isobutane 75-28-5	1-hr	126	23000
Isopentane 78-78-4	1-hr	10	3800
Pentane, n- 109-66-0	1-hr	3	4100

The 1-hr GLCmax for ammonia is located along the western property line. The distance between the GLCmax and the property line is not provided for all other pollutants given the approach used by the applicant to determine the model predictions (individual source predictions were summed independent of time and space). See the modeling techniques section for further details on the modeling approach. The applicant did not provide a GLCni.

3. Model Used and Modeling Techniques

AERMOD (Version 12345) was used in a refined screening mode.

A unitized emission rate of 1 lb/hr was used to predict a generic short-term and long-term impact for each source. The generic impacts for each applicable source

were summed to get a total generic impact for each pollutant. The total generic impact was multiplied by the proposed pollutant specific emission rates to calculate a maximum predicted concentration for each pollutant. This approach was used for all health effects analyses, excluding ammonia.

Two operational scenarios were modeled for the 1-hr NO_2 and 24-hr $PM_{10}/PM_{2.5}$ analyses. These scenarios represent operations of the heaters (EPNs 65B-81A, 65B-81B, 65B-81C, 65B-81D, and 65B-81E) and combustion turbine (EPN CT). The first scenario represents normal operations, which consists of three heaters operating concurrently with the combustion turbine and all other sources. The scenario was divided into three sub-scenarios based on the possible combinations of heater operation. The heaters will be arranged in a north-south line, and the sub-scenarios represent operations of the three northernmost heaters, the three southernmost heaters, and the three middle heaters. The second scenario represents the planned MSS scenario, which consists of all five heaters operating concurrently with startup/shutdown of the combustion turbine and all other sources. The results from the scenario with the highest predicted concentrations were reported in Tables 1, 2, 3 and 4. For the CO and SO_2 analyses, the maximum hourly emissions were modeled for all sources concurrently.

A. Land Use

Medium roughness and elevated terrain were used in the modeling analysis. These selections are consistent with the AERSURFACE analysis, topographic map, DEMs, and aerial photography. The selection of medium roughness is reasonable.

B. Meteorological Data

Surface Station and ID: Angleton, TX (Station #: 12976)
Upper Air Station and ID: Lake Charles, LA (Station #: 03937)
Meteorological Dataset: 2006 – 2010 for PSD analyses;
2008 for all other analyses
Profile Base Elevation: 8 meters

C. Receptor Grid

The grid modeled was sufficient in density and spatial coverage to capture representative maximum ground-level concentrations.

D. Building Wake Effects (Downwash)

Input data to Building Profile Input Program Prime (Version 04274) are consistent with the aerial photography, plot plan, and modeling report.

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4. Modeling Emissions Inventory

The modeled emission point and area source parameters and rates were consistent with the modeling report. The source characterizations used to represent the sources were appropriate.

The computation of the effective stack diameters for the flares is consistent with TCEQ modeling guidance.

Hour-of-day scalars were used for certain off-property sources, and the use of these scalars is consistent with permit representations.

NO_x to NO_2 conversion factors of 0.8 and 0.75 were applied to the predicted 1-hr and annual NO_x concentrations, respectively, which is consistent with guidance for combustion sources.

The applicant evaluated the emergency generator engines and emergency air compressor engines at the liquefaction plant (EPNs LIQEG-1, LIQEG-2, LIQEG-3, LIQEG-4, LIQEG-5, LIQEG-6, and LIQEAC-1) and the pretreatment facility (EPNs PTFEG-1, PTFEG-2, PTFEG-3, PTFEG-4, PTFEG-5, and PTFEAC-1) based on EPA guidance for intermittent sources. The applicant modeled these sources using annual average emission rates for the 1-hr NO_2 NAAQS analysis. According to the applicant, the emergency generator engines and emergency air compressor engines are intermittent sources: each source will be tested once per week for two hours or less and no more than 50 hours per year.

The applicant evaluated the diesel firewater pump engines at the liquefaction plant (EPNs LIQFWP-1 and LIQFWP-2) and the pretreatment facility (EPN PTFWP-1) based on EPA guidance for intermittent sources. The applicant modeled these sources using annual average emission rates for the 1-hr NO_2 NAAQS analysis. According to the applicant, the diesel firewater pump engines are intermittent sources: each source will be tested once per week for two hours or less and no more than 100 hours per year.

The emergency generator engines, emergency air compressor engines, and diesel firewater pump engines were modeled with 24-hr average emission rates for the short-term $PM_{10}/PM_{2.5}$ averaging time analyses. The short-term emission rates for these sources were based on two hours of operation per day.

The applicant evaluated planned MSS emissions from the liquefaction emergency flare (EPN LIQFLARE) based on EPA guidance for intermittent sources. The applicant modeled this source using an annual average emission rate for the 1-hr NO_2 NAAQS analysis. According to the applicant, the liquefaction emergency flare is an intermittent source: each planned MSS event will last for 24 hours or less and no more than four events per year. The modeled annual average emission rates were based on the maximum amount of gas sent to the flare during a planned MSS event, not on operating time. The ADMT conducted test

modeling using annual average emission rates based on 96 hours and determined that this would not significantly affect the modeling results.

The applicant evaluated planned MSS emissions from the PTF flare (EPN PTFFLARE) based on EPA guidance for intermittent sources. The applicant modeled this source using an annual average emission rate for the 1-hr NO_2 NAAQS analysis. According to the applicant, the PTF flare is an intermittent source: it will be used for planned MSS events no more than eight hours per year.

The applicant evaluated the start-up/shutdown emissions from the combustion turbine (EPN CT) based on EPA guidance for intermittent sources. The applicant modeled this source using an annual average emission rate for the 1-hr NO_2 NAAQS analysis. According to the applicant, the start-up/shutdown of the combustion turbine is an intermittent source: each start-up/shutdown event will last for 90 minutes or less and no more than four events per year.

The start-up/shutdown emissions from the combustion turbine and lube oil vent (EPN LUBVENT) were modeled with 24-hr average emission rates for the short-term $PM_{10}/PM_{2.5}$ averaging time analyses. The short-term emission rates for these sources were based on 90 minutes of operation per day.

With the exception of the sources noted above, maximum allowable hourly emission rates were used for the short-term and annual averaging time analyses. Annual average emission rates were used for certain sources for the annual averaging time analyses for NO_2 and $PM_{10}/PM_{2.5}$.

Several existing sources at the Freeport LNG Quintana Island Terminal were not included in the $PM_{2.5}$ NAAQS analysis. These sources include Johnstone heaters (source IDs 689B_973, 689B_974, 689B_975 , 689B_976 , 689B_977, 689B_978, 689B_979, 689B_980, and 689B_981) and K-7 compressors (source IDs 689K_969, 689K_970, and 689K_971). According to the applicant, these sources will not be used once the Liquefaction project is constructed and operational. These sources will not operate concurrently with the Liquefaction project.

Class II SIL Results: Combined Modeling Impacts

Pollutant	Averaging Period	Year	SILs (ug/m³)	NAAQS (ug/m3)	Harold Doty		Christopher Kall		Melanie Oldham		Laura Calvo Jones		James Kall		
					X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	
					272427.0527	3201016.859	272385.9817	3201341.072	270482.876	3204427.245	276199.4793	3210817.56	275253.2671	3203023.83	Residence Coordinates
					272,432	3,201,026	272,332	3,201,351	270,438	3,204,476	276,438	3,210,976	275,257	3,203,026	Closest Modeled Receptor Coodinates
PM_{10}	24-hour	MAX of 2006-2010	5	150	0.36		0.31		0.21		0.50		0.44		
	Annual	2006	1	none	0.02		0.02		0.01		0.02		0.03		
		2007			0.02		0.02		0.02		0.02		0.03		
		2008			0.02		0.02		0.01		0.03		0.03		
		2009			0.02		0.02		0.02		0.03		0.03		
		2010			0.02		0.02		0.02		0.02		0.02		
$PM_{2.5}$	24-hour	2006-2010	1.2	35	0.24		0.24		0.18		0.36		0.33		
		MAX of 2006-2010	1.2	35	0.36		0.31		0.21		0.50		0.44		
	Annual	2006-2010	0.3	12	0.02		0.02		0.02		0.02		0.03		
		2006	0.3	12	0.02		0.02		0.01		0.02		0.03		
		2007			0.02		0.02		0.02		0.02		0.03		
		2008			0.02		0.02		0.01		0.03		0.03		
		2009			0.02		0.02		0.02		0.03		0.03		
		2010			0.02		0.02		0.02		0.02		0.02		
NO_2	ARM 1-hour	2006-2010	7.5	188	0.85		0.89		0.81		0.85		0.72		
	ARM Annual	2006	1	100	0.02		0.02		0.01		0.01		0.02		
		2007			0.02		0.02		0.01		0.01		0.02		
		2008			0.02		0.02		0.01		0.01		0.02		
		2009			0.02		0.02		0.01		0.01		0.02		
		2010			0.02		0.02		0.01		0.01		0.02		
CO	1-hour	2008	2,000	40,000	61.08		64.97		68.89		66.10		60.69		
	8-hour	2008	500	10,000	18.86		33.18		21.14		24.35		26.18		
SO_2	1-hour	2008	7.8	196	0.97		1.06		1.05		1.20		0.94		
	3-hour	2008	25	1300	0.41		0.52		0.50		1.00		0.41		
	24-hour	2008	5	365	0.11		0.15		0.07		0.27		0.15		
	Annual	2008	1	80	0.01		0.01		0.01		0.01		0.01		

* Based on dispersion modeling performed in July 2013.
UTM Coordinates (meters) NAD 83

State Property Line Analysis Results: Combined Modeling Impacts

				Harold Doty		Christopher Kall		Melanie Oldham		Laura Calvo Jones		James Kall		
				X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	
Pollutant	Averaging Period	Year	Standard ($\mu g/m^3$)	272427.05	3201016.859	272335.98	3201341.072	270482.88	3204427.245	276199.48	3210817.56	275253.27	3203023.83	Residence Coordinates
				272,432	3,201,026	272,332	3,201,351	270,438	3,204,476	276,438	3,210,976	275,257	3,203,026	Closest Modeled Receptor Coodinates
SO_2	30-min	2008	1021	0.97		1.06		1.05		1.20		0.94		
H_2S	30-min	2008	108	0.17		0.17		0.21		0.24		0.18		
H_2SO_4	1 hour	2008	50	0.07		0.08		0.08		0.09		0.07		
	24 hour	2008	15	0.01		0.01		0.01		0.02		0.01		

* Based on dispersion modeling performed in July 2013.
UTM Coordinates (meters) NAD 83

State Health Effects Evaluation (ESL Analysis): Combined Modeling Impacts

Constituents	CAS	TCEQ ESL [ST] µg/m³	TCEQ ESL [LT] µg/m³	Harold Doty X_Easting	Harold Doty Y_Northing	Christopher Kall X_Easting	Christopher Kall Y_Northing	Melanie Oldham X_Easting	Melanie Oldham Y_Northing	Laura Calvo Jones X_Easting	Laura Calvo Jones Y_Northing	James Kall X_Easting	James Kall Y_Northing
				272427.0527	3201016.859	272335.98	3201341.072	270482.88	3204427.245	276199.48	3210817.6	275253.27	3203023.83
				272432	3201026	272332	3201351	270438	3204476	276438	3210976	275257	3203026
				ST µg/m3	LT µg/m3	ST µg/m3	LT µg/m3	ST µg/m3	LT µg/m3	ST µg/m3	LT µg/m3	ST µg/m3	LT µg/m3
Ammonia	7664-41-7	170	17	1.06	0.01	1.20	0.01	2.47	9.09E-03	2.76	0.01	3.43	0.02
n-Hexane	110-54-3	5,300	200	9.94E-03	1.47E-06	8.75E-03	1.30E-06	0.02	1.08E-06	9.34E-03	1.19E-06	0.01	8.41E-07
Benzene	71-43-2	170	4.5	2.74E-03	2.34E-05	2.90E-03	2.35E-05	3.47E-03	1.54E-05	4.19E-03	3.06E-05	3.14E-03	2.65E-05
Toluene	108-88-3	3,470	1,200	1.51E-03	1.28E-05	1.59E-03	1.29E-05	1.91E-03	8.47E-06	2.30E-03	1.68E-05	1.73E-03	1.45E-05
p-Xylene	106-42-3	250	180	5.63E-04	4.80E-06	5.95E-04	4.82E-06	7.13E-04	3.16E-06	8.61E-04	6.28E-06	6.45E-04	5.43E-06
isobutane	75-28-5	23000	7200	3.49	7.31E-05	3.54	6.64E-05	2.76	4.71E-05	3.44	4.24E-05	2.69	5.04E-05
n-Butane	106-97-8	66000	7200	3.01	5.54E-05	3.07	5.12E-05	2.28	3.49E-05	2.98	3.25E-05	2.25	4.23E-05
Isopentane	78-78-4	3800	7100	0.08	5.17E-06	0.08	4.30E-06	0.11	3.70E-06	0.08	2.85E-06	0.09	1.71E-06
n-Pentane	109-66-0	4100	7100	0.02	1.61E-06	0.02	1.32E-06	0.03	1.17E-06	0.02	8.79E-07	0.02	4.50E-07

Resident Coordinates

Closest Modeled Receptor Coodinates

* Based on dispersion modeling performed in July 2013.

UTM Coordinates (meters) NAD 83

ESL values obtained from TCEQ ESL list dated February 1, 2013, which were the ESL values in place at the time FLNG's applications were reviewed.

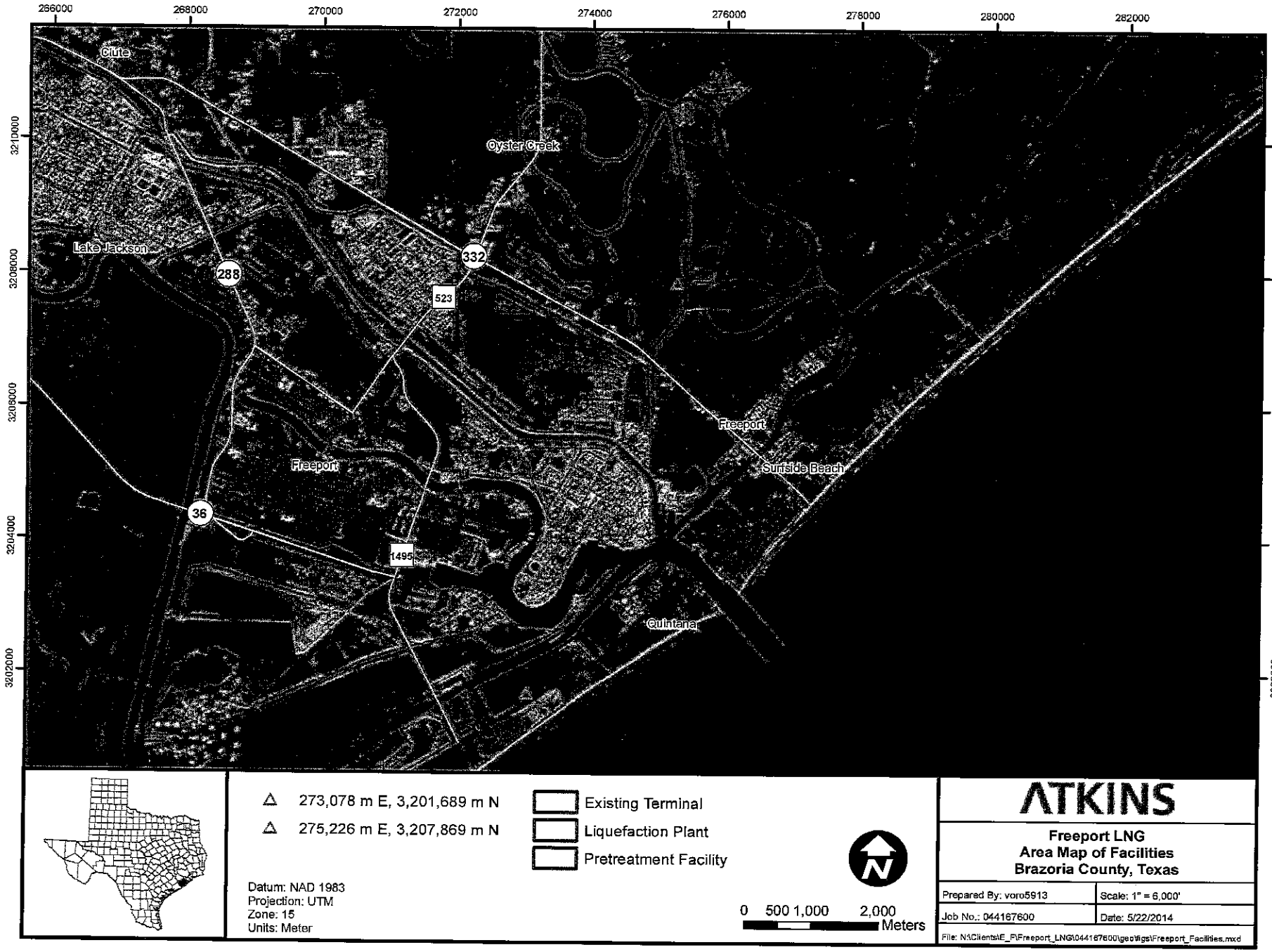
266000
268000
270000
272000
274000
276000
278000
280000
282000
3210000
3208000
3206000
3204000
3202000
Clute
Oyster Creek
Lake Jackson
288
332
523
Freeport
Freeport
Surfside Beach
36
1495
Quintana
273,078 m E, 3,201,689 m N
275,226 m E, 3,207,869 m N
Existing Terminal
Liquefaction Plant
Pretreatment Facility
Datum: NAD 1983
Projection: UTM
Zone: 15
Units: Meter
0 500 1,000 2,000
Meters
ATKINS
Freeport LNG
Area Map of Facilities
Brazoria County, Texas
Prepared By: voro5913
Scale: 1" = 6,000'
Job No.: 044167600
Date: 5/22/2014
File: N:\Clients\E_F\Freeport_LNG\044167600\geo\figs\Freeport_Facilities.mxd

Exhibit 1-C

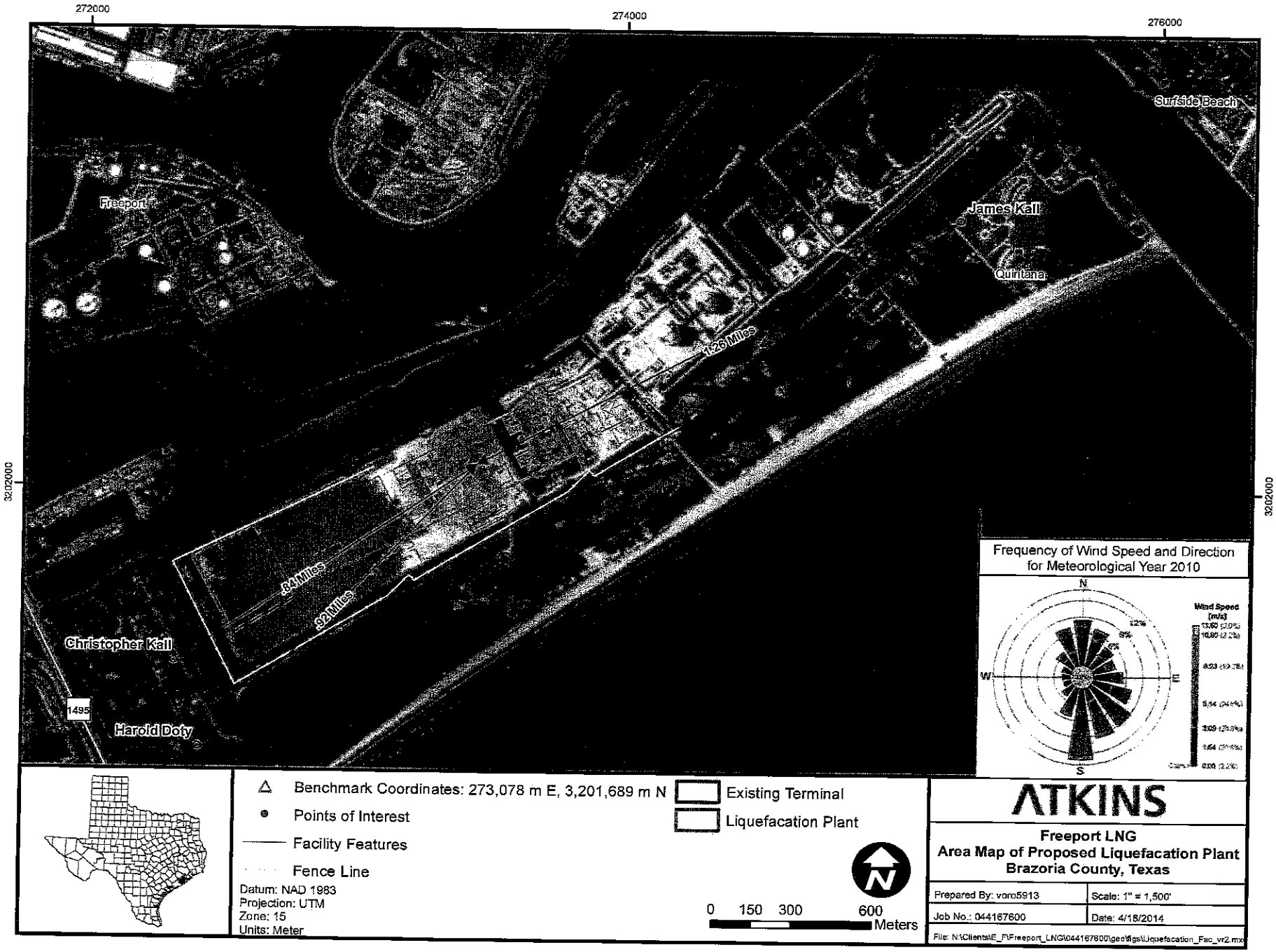
272000
274000
276000
3202000
Freeport
Surfside Beach
James Kall
Quintana
1.26 Miles
.84 Miles
.92 Miles
Christopher Kall
1495
Harold Doty
Frequency of Wind Speed and Direction
for Meteorological Year 2010
N
W
E
S
Wind Speed
(m/s)
Benchmark Coordinates: 273,078 m E, 3,201,689 m N
Points of Interest
Facility Features
Fence Line
Existing Terminal
Liquefacation Plant
Datum: NAD 1983
Projection: UTM
Zone: 15
Units: Meter
0 150 300 600
Meters
ATKINS
Freeport LNG
Area Map of Proposed Liquefacation Plant
Brazoria County, Texas
Prepared By: voro5913
Scale: 1" = 1,500'
Job No.: 044167600
Date: 4/18/2014
File: N:\Clients\E_F\Freeport_LNG\044167600\geo\figs\Liquefacation_Fac_vr2.mx

Exhibit 1-D

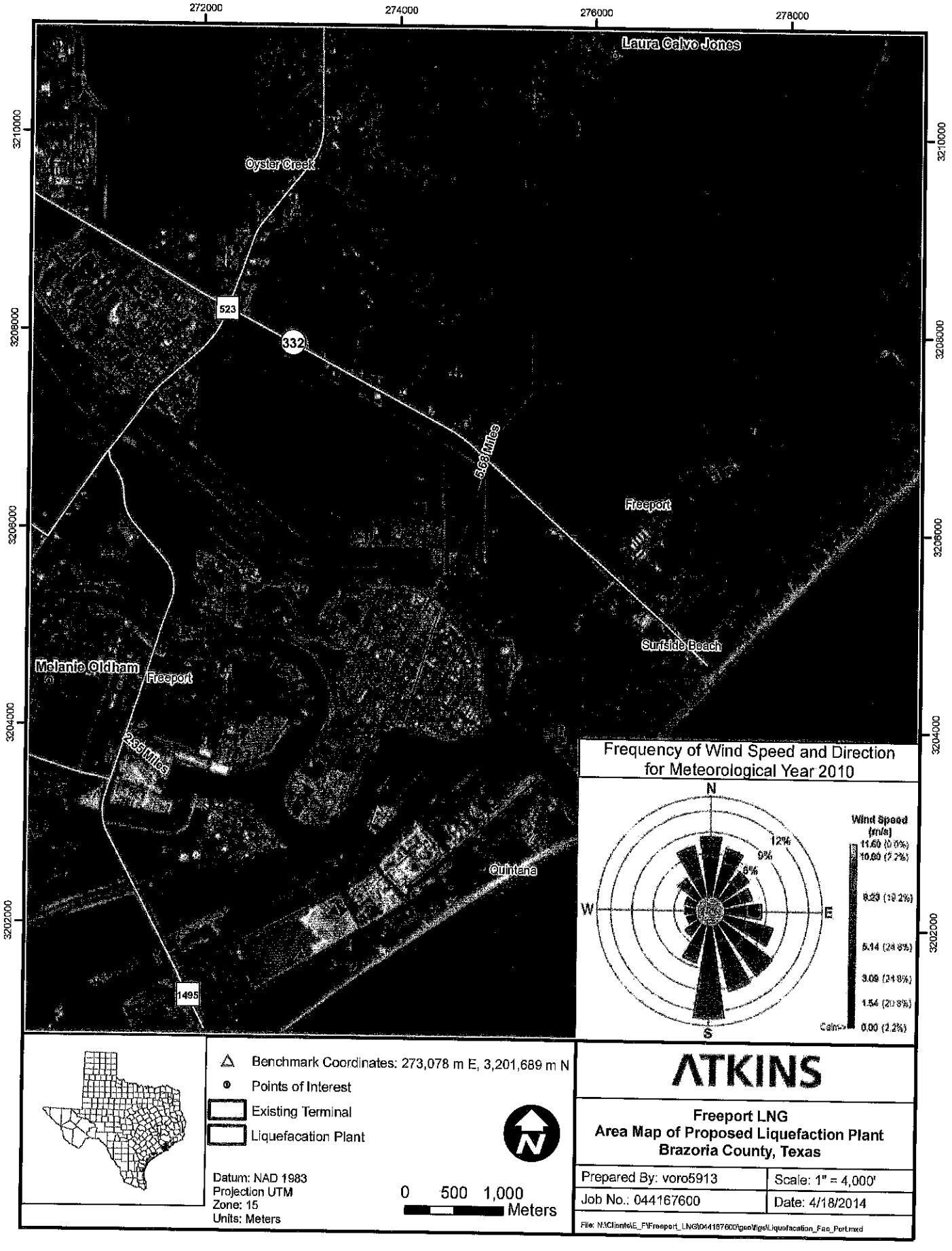
272000
274000
276000
278000
3210000
3208000
3206000
3204000
3202000
Laura Calvo Jones
Oyster Creek
523
332
3.69 Miles
Freeport
Surfside Beach
Melanie Oldham
Freeport
2.39 Miles
Quintana
1495
Frequency of Wind Speed and Direction
for Meteorological Year 2010
N
E
S
W
12%
9%
6%
Wind Speed
(m/s)
11.60 (0.0%)
10.80 (2.2%)
8.23 (19.2%)
5.14 (24.8%)
3.09 (24.8%)
1.54 (20.8%)
0.00 (2.2%)
Calms
Benchmark Coordinates: 273,078 m E, 3,201,689 m N
Points of Interest
Existing Terminal
Liquefacation Plant
Datum: NAD 1983
Projection UTM
Zone: 15
Units: Meters
0 500 1,000
Meters
ATKINS
Freeport LNG
Area Map of Proposed Liquefaction Plant
Brazoria County, Texas
Prepared By: voro5913
Scale: 1" = 4,000'
Job No.: 044167600
Date: 4/18/2014
File: N:\Clients\E_F\Freeport_LNG\044167600\geo\figs\Liquefacation_Fac_Port.mxd

Exhibit 1-E

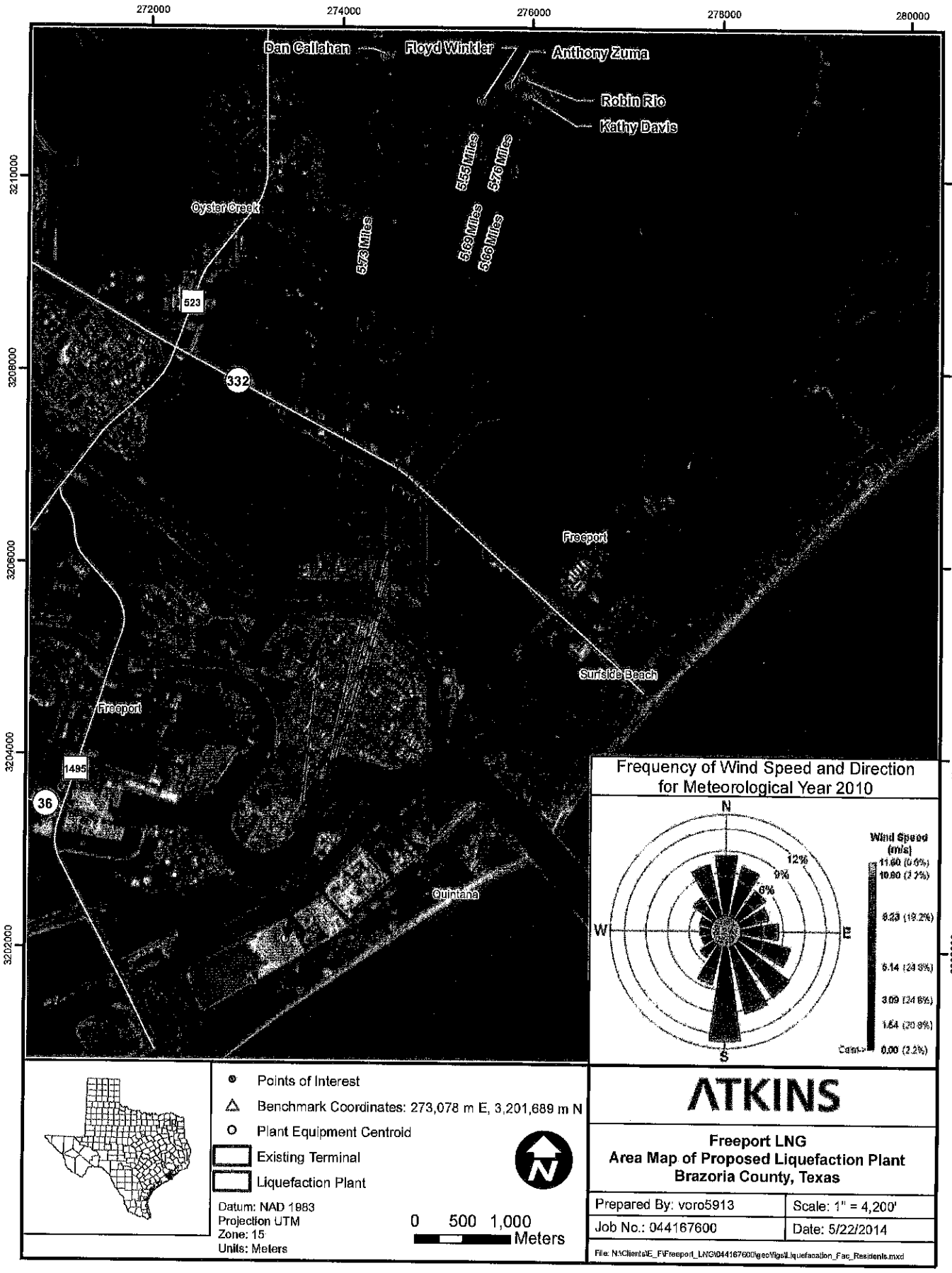
272000
274000
276000
278000
280000
3210000
3208000
3206000
3204000
3202000
Dan Callahan
Floyd Winkler
Anthony Zuma
Robin Rio
Kathy Davis
5.55 Miles
5.76 Miles
5.73 Miles
5.69 Miles
5.66 Miles
Oyster Creek
523
332
Freeport
Surfside Beach
Freeport
1495
36
Quintana
Frequency of Wind Speed and Direction
for Meteorological Year 2010
N
E
S
W
12%
9%
6%
Wind Speed
(m/s)
11.60 (0.6%)
10.80 (7.7%)
8.23 (19.2%)
5.14 (24.9%)
3.09 (24.6%)
1.54 (20.8%)
Calm
0.00 (2.2%)
Points of Interest
Benchmark Coordinates: 273,078 m E, 3,201,689 m N
Plant Equipment Centroid
Existing Terminal
Liquefaction Plant
Datum: NAD 1983
Projection UTM
Zone: 15
Units: Meters
0 500 1,000
Meters
ATKINS
Freeport LNG
Area Map of Proposed Liquefaction Plant
Brazoria County, Texas
Prepared By: voro5913
Scale: 1" = 4,200'
Job No.: 044167600
Date: 5/22/2014
File: N:\Clients\E_F\Freeport_LNG\044167600\gec\figs\Liquefaction_Fac_Residents.mxd

Exhibit 1-F

EXHIBIT 2

TCEQ DOCKET NO. 2014-0691-AIR

APPLICATION BY FREEPORT LNG DEVELOPMENT, L.P., LIQUEFACTION PLANT AIR QUALITY PERMIT NOS. 100114, PSDTX 1282 AND N150	**§ § § § §**	**BEFORE THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

AFFIDAVIT OF DR. THOMAS DYDEK, PhD, DABT, PE

State of Texas §
County of Travis §

Before me, the undersigned Notary Public in and for Travis County Texas, personally appeared THOMAS DYDEK, Ph.D., D.A.B.T., P.E., the affiant, whose identity is known to me. After I administered an oath, affiant testified as follows:

1. My name is Thomas Dydek. I am over 18 years of age, of sound mind, and capable of making this affidavit. The facts in this affidavit are within my personal knowledge and are true and correct.

2. I am a Board Certified Toxicologist as a Diplomat of the American Board of Toxicology (D.A.B.T.) and a Licensed Professional Engineer (P.E.). I have over 30 year's continuous experience in the environmental field as a toxicologist focusing on human health risk assessments and evaluations of the potential for adverse public health effects of exposure to air contaminants. I have a Bachelor's Degree in Mechanical Engineering and a Master's Degree in Environmental Science and Engineering from Rice University in Houston, Texas. My doctoral degree is in Environmental Science and Engineering from the University of North Carolina School of Public Health. I have also done a Post-Doctoral Fellowship in Toxicology in the College of Pharmacy at the University of Texas at Austin.

Board certification in toxicology is similar to that in the medical fields. The American Board of Toxicology is the organization that conducts board certification activities for toxicology in this country. Candidates for certification must demonstrate a high level of education and a sufficient number of years in professional practice to qualify to sit for the Board Certification examination. The examination is a two-day written test that covers all aspects of toxicology. If that examination is passed, the candidate becomes a Diplomate of the American Board of Toxicology, or D.A.B.T. for short. To keep one's certification current, it must be renewed every five years. I became Board-Certified in 1995 and I have been re-certified in 2000, 2005, and 2010. I became a Licensed Professional Engineer in Texas in 1992 and I have kept my P.E. license current since that time.

My chief area of expertise is the evaluation of human health and welfare effects of exposure to environmental pollution. While with the U.S. Fish and Wildlife Service in Albuquerque, New Mexico, I was responsible for control of air, water, and solid waste pollution at agency facilities in an eight-state area. I also worked for the U.S. Environmental Protection Agency in Dallas, Texas as a permit engineer in the National Pollutant Discharge Elimination System (NPDES) program. During my doctoral program, I worked for the EPA in North Carolina in the area of air pollution research and air pollutant exposure studies using human volunteers. After returning to Texas in 1982, I taught several courses in the Environmental Studies Program at St. Edward's University in Austin. I then entered my Post-doctoral program at the University of Texas.

From 1984 to 1991, I was the Senior Staff Toxicologist at the Texas Air Control Board (a predecessor agency to the TCEQ) in Austin. In that job, I performed health and welfare effects evaluations for over 1,000 permit applications. I also reviewed many ambient air and contaminated soil sampling reports to determine the potential for adverse effects on public health. I participated in many Public Meetings and gave extensive expert toxicological testimony at agency Public Hearings.

In 1991, I joined the staff of Jones and Neuse, Inc., an environmental consulting services company in Austin, Texas. In that job, I performed quantitative human health risk assessments for chemical contamination of air, water, and soil. I have owned and operated my own toxicology and engineering consulting firm, Dydek Toxicology Consulting, since 1994. In my current job, I have continued my work on human health risk assessments for air quality permitting and other agency-related programs.

My additional professional activities include active membership in many technical associations and service on various City and State citizen committees in the areas of air quality, toxicology, risk assessment, and solid waste management. I have also served as an Adjunct Professor in the Environmental Health Division of the University of Texas School of Public Health in San Antonio (1987-2000). I have attended more than 130 technical environmental conferences and made presentations at more than 25 of these meetings.

3. I have prepared this Affidavit in support of Applicant Freeport LNG Development L.P.'s ("Freeport LNG") Response to Hearing Requests filed in the above identified docket. The opinions I give in this Affidavit were formulated based upon my experience, training and education in the fields of toxicology and engineering, and my review of the following information concerning combined air emissions from Freeport LNG's two proposed plants – the Pretreatment Facility and the Liquefaction Plant - to be located in the Freeport, Texas area (referred to herein as the "Liquefaction Project"): the results of air dispersion modeling performed by Atkins North America, Inc. ("Atkins") that determined maximum possible off-property impacts of air contaminants to be emitted by the proposed Liquefaction Project, and modeling results performed by Atkins demonstrating impacts in close proximity to the individual Hearing Requestors'

residences.[1] Based on my review of this information, and on my expertise and experience as a toxicologist, I have reached the conclusions set forth in this affidavit.

It is my opinion that the Hearing Requestors' requests for a Contested Case Hearing in this matter should be denied. I base this opinion on the following facts:

4. It is one of the basic tenets of toxicology that "the dose makes the poison". In other words, a person's exposure to a potentially toxic chemical will not result in any adverse effects unless that exposure is of sufficient magnitude, duration, and frequency to cause those effects. It is my opinion in this matter that the levels of air contaminants to be emitted from the proposed Freeport LNG Liquefaction Project will not be of a magnitude, duration, or frequency great enough to cause any adverse human health or welfare effects to the Hearing Requestors in this case.

5. There are two major categories of air contaminants of concern in this type of health effects evaluation process: criteria air pollutants and non-criteria air pollutants. Criteria air contaminants are those for which a National Ambient Air Quality Standard (NAAQS) or a Texas Commission on Environmental Quality (TCEQ) Property Line Standard has been set. The NAAQS and the State of Texas standards have been set at levels protective of the health and welfare of even the most sensitive members of the general population with an adequate margin of safety. Sensitive members of the population include the very young, the very old, and people with pre-existing medical conditions such as asthma and other respiratory diseases and diseases of the cardiovascular system.

Non-criteria air pollutants are those that have neither a NAAQS nor a State of Texas air quality standard. While there are no air quality standards for the latter group of air contaminants, the TCEQ has established guideline exposure levels which are used to evaluate the potential for adverse health or welfare effects of exposure to these air contaminants. These guideline levels are called Effects Screening Levels (ESLs). ESLs have been set at levels at or below which no adverse human health or welfare effects are expected.

Health-based ESLs have been set based on human or animal data that show the levels of chemical exposures at which no adverse effects (what's called a no adverse effects level or NOAEL) or very minor adverse effects (a low adverse effects level or LOAEL) occur. These NOAELs or LOAELs are then reduced by safety factors designed to make the data applicable to community exposures to air contaminants. ESLs are very conservative because they have been set at levels typically orders of magnitude smaller than exposure levels that can actually cause adverse health effects.

Welfare-based ESLs are based on prevention of odor nuisance and effects on vegetation. Most welfare-based ESLs have been set to prevent odor nuisances. These ESLs are set at the odor thresholds for chemicals as determined in a laboratory setting. These ESLs are

[1] While the Hearing Requestors in this docket only requested a hearing as to the Liquefaction Plant, I nonetheless am evaluating the impact of the emissions from the project as a whole, which results in a more conservative analysis.

very conservative as well, since the levels at which odors can be detected in the laboratory will be lower than those likely to be detected in a community setting. There are only a few vegetation-based ESLs (for hydrogen fluoride, other fluorides, and ethylene). These ESLs have been set at levels at which minor damage to plant species has been found.

6. The proposed Freeport LNG Liquefaction Project will emit five air contaminants that have NAAQS: carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). The proposed Project will also emit three air contaminants that have State of Texas standards: sulfur dioxide, hydrogen sulfide, and sulfuric acid mist. Non-criteria air contaminants to be emitted from the proposed Project include ammonia and various volatile organic compounds (VOCs).

7. The health effects evaluation procedure used in Texas in air quality permitting matters is to first predict the expected off-property airborne levels of air contaminants to be emitted from an industrial source and then to compare those predicted levels to the air quality standards and guidelines mentioned above. If predicted levels do not exceed health- and welfare-based standards and guidelines, no adverse effects will occur. This is a well-recognized, accepted, and scientifically reliable method of evaluating the human health and welfare risks (if any) of chemicals emitted into the air. As an independent toxicologist, I agree that this is the best way to evaluate the potential for adverse effects from air contaminant emissions in air quality permitting situations.

8. Since the TCEQ air quality permits are "pre-construction" permits, computer-based methods are used to predict the impacts of emissions that will occur after the plants are built. This type of computer modeling is referred to as air dispersion modeling. Air dispersion modeling is a well-accepted and almost universally used method by which off-property air concentrations of chemicals emitted from emission sources are predicted. The model used in Texas is called AERMOD. This model was developed and tested by the U.S. Environmental Protection Agency and is used by permit applicants seeking air quality permits from the TCEQ.

Atkins has performed air dispersion modeling on behalf of the Applicant to determine the maximum possible off-property impacts (i.e. airborne concentrations) of the air contaminants to be emitted from the proposed Freeport LNG Liquefaction Project. It is common and accepted practice to rely on the results of such modeling when performing human health effects evaluations. I relied on those modeling results in the preparation of this Affidavit. That modeling showed that the maximum impacts of all air contaminants anywhere off of the FLNG property would meet all applicable federal and state guidelines.[2] In addition, I relied upon modeling results determining impacts at the individual Hearing Requestors' residences, performed by Atkins.[3] It is also common and

[2] *See* Affidavit of Ruben Velasquez, P.E., Atkins.

[3] *See* Affidavit of Ruben Velasquez, P.E., Atkins; *see also* Exhibit 2-A, which is a true and correct copy of modeling results provided to me by Atkins.

accepted practice to rely on the results of such modeling when performing human health effects evaluations. The TCEQ Air Dispersion Modeling Team has reviewed and approved the modeling submitted by the Applicant for this project.[4] To analyze potential impacts at individual Hearing Requestor's residences, the grid points closest to each residence were located and the predicted values modeled for those points were determined. The differences between the impacts at the residences and at the closest point to those residences in the model grid are insignificant.

Tables 1a through 1e show the maximum predicted impacts at the locations of the residences of the five Hearing Requestors for air contaminants having NAAQS, the NAAQS levels, and the percentage of the NAAQS represented by those maximum levels.

Tables 2a through 2e show the maximum predicted impacts at the locations of the residences of the five Hearing Requestors of air contaminants having Texas Property Line Standards, the level of those standards, and the percentage of the Texas Standard represented by those maximum levels.

Tables 3a through 3e show the maximum predicted impacts at the locations of the residences of the five Hearing Requestors for air contaminants having Effects Screening Levels, the value of those ESLs, and the percentage of the ESLs represented by those maximum levels.

The airborne concentrations predicted by the Applicant's air dispersion modeling are conservative; that is, they likely over-predict the levels of air contaminants that could actually occur in the vicinity of the proposed Freeport LNG Liquefaction Plant and/or at the residences of the Hearing Requestors. For example, it was assumed that the maximum emissions would occur during the hours in which meteorological conditions least favor the dispersion of those air contaminants.

The following Tables 1a through 1e show the maximum predicted impacts of air contaminants at the Requestors' residences ranged from 0.01% to 1.4% of the applicable National Ambient Air Quality Standards. Another way to express this is that the predicted impacts were from 70 to 10,000 times lower than the NAAQS.

The following Tables 2a through 2e show the maximum predicted impacts at the residences ranged from 0.07% to 0.22% of the State of Texas Property Line Standards. In other words, the impacts at the Requestors' residences were from 450 to 1,400 times lower than those standards.

The following Tables 3a through 3e show the maximum predicted impacts at the residences for chemicals having ESLs ranged from 0.000000006% to 2.0% of the ESLs for those chemicals. Put another way, these impacts were from 50 to 1.6 billion times lower than the applicable ESLs.

[4] TCEQ Air Quality Analysis Audit Memo for this project, dated November 20, 2013.

Table 1a. Comparison of Maximum Predicted Air Contaminant Levels* at the Harold Doty Residence to National Ambient Air Quality Standards (NAAQS)

Air Contaminant	Averaging Time	NAAQS level ($\mu g/m^3$)	Maximum Predicted Level at the Harold Doty Residence ($\mu g/m^3$)	Percentage of the NAAQS
Carbon monoxide	1 hour	40,000	61.08	0.15%
Carbon monoxide	8 hours	10,000	18.86	0.19%
Nitrogen dioxide	1 hour	188	0.85	0.45%
Nitrogen dioxide	Annual	100	0.02	0.02%
Sulfur dioxide	1 hour	196	0.97	0.49%
Sulfur dioxide	3 hours	1,300	0.41	0.03%
Sulfur dioxide	24 hours	365	0.11	0.03%
Sulfur dioxide	Annual	80	0.01	0.01%
PM_{10}	24 hours	150	0.36	0.24%
PM_{10}	Annual	None	0.02	n/a
$PM_{2.5}$	24 hours	35	0.36	1.0%
$PM_{2.5}$	Annual	12	0.02	0.16%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 1b. Comparison of Maximum Predicted Air Contaminant Levels* at the Christopher Kall Residence to National Ambient Air Quality Standards (NAAQS)

Air Contaminant	Averaging Time	NAAQS level ($\mu g/m^3$)	Maximum Predicted Level at the Christopher Kall Residence ($\mu g/m^3$)	Percentage of the NAAQS
Carbon monoxide	1 hour	40,000	64.97	0.16%
Carbon monoxide	8 hours	10,000	33.18	0.33%
Nitrogen dioxide	1 hour	188	0.89	0.47%
Nitrogen dioxide	Annual	100	0.02	0.02%
Sulfur dioxide	1 hour	196	1.06	0.54%
Sulfur dioxide	3 hours	1,300	0.52	0.04%
Sulfur dioxide	24 hours	365	0.15	0.04%
Sulfur dioxide	Annual	80	0.01	0.01%
PM_{10}	24 hours	150	0.31	0.21%
PM_{10}	Annual	None	0.02	n/a
$PM_{2.5}$	24 hours	35	0.31	0.89%
$PM_{2.5}$	Annual	12	0.02	0.17%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 1c. Comparison of Maximum Predicted Air Contaminant Levels* at the Melanie Oldham Residence to National Ambient Air Quality Standards (NAAQS)

Air Contaminant	Averaging Time	NAAQS level ($\mu g/m^3$)	Maximum Predicted Level at the Melanie Oldham Residence ($\mu g/m^3$)	Percentage of the NAAQS
Carbon monoxide	1 hour	40,000	68.89	0.17%
Carbon monoxide	8 hours	10,000	21.14	0.21%
Nitrogen dioxide	1 hour	188	0.81	0.43%
Nitrogen dioxide	Annual	100	0.01	0.01%
Sulfur dioxide	1 hour	196	1.05	0.54%
Sulfur dioxide	3 hours	1,300	0.50	0.04%
Sulfur dioxide	24 hours	365	0.07	0.02%
Sulfur dioxide	Annual	80	0.01	0.01%
PM_{10}	24 hours	150	0.21	0.14%
PM_{10}	Annual	None	0.02	n/a
$PM_{2.5}$	24 hours	35	0.21	0.60%
$PM_{2.5}$	Annual	12	0.02	0.17%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 1d. Comparison of Maximum Predicted Air Contaminant Levels* at the Laura Jones Residence to National Ambient Air Quality Standards (NAAQS)

Air Contaminant	Averaging Time	NAAQS level ($\mu g/m^3$)	Maximum Predicted Level at the Laura Jones Residence ($\mu g/m^3$)	Percentage of the NAAQS
Carbon monoxide	1 hour	40,000	66.10	0.17%
Carbon monoxide	8 hours	10,000	24.35	0.24%
Nitrogen dioxide	1 hour	188	0.85	0.45%
Nitrogen dioxide	Annual	100	0.01	0.01%
Sulfur dioxide	1 hour	196	1.20	0.61%
Sulfur dioxide	3 hours	1,300	1.00	0.08%
Sulfur dioxide	24 hours	365	0.27	0.07%
Sulfur dioxide	Annual	80	0.01	0.01%
PM_{10}	24 hours	150	0.50	0.33%
PM_{10}	Annual	None	0.03	n/a
$PM_{2.5}$	24 hours	35	0.50	1.4%
$PM_{2.5}$	Annual	12	0.03	0.25%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 1e. Comparison of Maximum Predicted Air Contaminant Levels* at the James Kall Residence to National Ambient Air Quality Standards (NAAQS)

Air Contaminant	Averaging Time	NAAQS level ($\mu g/m^3$)	Maximum Predicted Level at the James Kall Residence ($\mu g/m^3$)	Percentage of the NAAQS
Carbon monoxide	1 hour	40,000	60.69	0.15%
Carbon monoxide	8 hours	10,000	26.18	0.26%
Nitrogen dioxide	1 hour	188	0.72	0.38%
Nitrogen dioxide	Annual	100	0.02	0.02%
Sulfur dioxide	1 hour	196	0.94	0.48%
Sulfur dioxide	3 hours	1,300	0.41	0.03%
Sulfur dioxide	24 hours	365	0.15	0.04%
Sulfur dioxide	Annual	80	0.01	0.01%
PM_{10}	24 hours	150	0.44	0.29%
PM_{10}	Annual	None	0.03	n/a
$PM_{2.5}$	24 hours	35	0.44	1.3%
$PM_{2.5}$	Annual	12	0.03	0.25%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 2a. Comparison of Maximum Predicted Air Contaminant Levels* at the Harold Doty Residence to State of Texas Property Line Standards for Criteria Pollutants

Air Contaminant	Averaging Time	Texas Property Line Standard ($\mu g/m^3$)	Maximum Predicted Level at the Harold Doty Residence ($\mu g/m^3$)	Percentage of the Standard
Hydrogen sulfide	30 minutes	108	0.17	0.16%
Sulfur dioxide	30 minutes	1,021	0.97	0.10%
Sulfuric acid mist	1 hour	50	0.07	0.14%
Sulfuric acid mist	24 hours	15	0.01	0.07%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 2b. Comparison of Maximum Predicted Air Contaminant Levels* at the Christopher Kall Residence to State of Texas Property Line Standards for Criteria Pollutants

Air Contaminant	Averaging Time	Texas Property Line Standard ($\mu g/m^3$)	Maximum Predicted Level at the Christopher Kall Residence ($\mu g/m^3$)	Percentage of the Standard
Hydrogen sulfide	30 minutes	108	0.17	0.16%
Sulfur dioxide	30 minutes	1,021	1.06	0.10%
Sulfuric acid mist	1 hour	50	0.08	0.16%
Sulfuric acid mist	24 hours	15	0.01	0.07%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 2c. Comparison of Maximum Predicted Air Contaminant Levels* at the Melanie Oldham Residence to State of Texas Property Line Standards for Criteria Pollutants

Air Contaminant	Averaging Time	Texas Property Line Standard ($\mu g/m^3$)	Maximum Predicted Level at the Melanie Oldham Residence ($\mu g/m^3$)	Percentage of the Standard
Hydrogen sulfide	30 minutes	108	0.21	0.19%
Sulfur dioxide	30 minutes	1,021	1.05	0.10%
Sulfuric acid mist	1 hour	50	0.08	0.16%
Sulfuric acid mist	24 hours	15	0.01	0.07%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 2d. Comparison of Maximum Predicted Air Contaminant Levels* at the Laura Jones Residence to State of Texas Property Line Standards for Criteria Pollutants

Air Contaminant	Averaging Time	Texas Property Line Standard ($\mu g/m^3$)	Maximum Predicted Level at the Laura Jones Residence ($\mu g/m^3$)	Percentage of the Standard
Hydrogen sulfide	30 minutes	108	0.24	0.22%
Sulfur dioxide	30 minutes	1,021	1.20	0.12%
Sulfuric acid mist	1 hour	50	0.09	0.18%
Sulfuric acid mist	24 hours	15	0.02	0.13%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 2e. Comparison of Maximum Predicted Air Contaminant Levels* at the James Kall Residence to State of Texas Property Line Standards for Criteria Pollutants

Air Contaminant	Averaging Time	Texas Property Line Standard ($\mu g/m^3$)	Maximum Predicted Level at the James Kall Residence ($\mu g/m^3$)	Percentage of the Standard
Hydrogen sulfide	30 minutes	108	0.18	0.17%
Sulfur dioxide	30 minutes	1,021	0.94	0.09%
Sulfuric acid mist	1 hour	50	0.07	0.14%
Sulfuric acid mist	24 hours	15	0.01	0.07%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 3a. Comparison of Maximum Predicted Air Contaminant Levels* at the Harold Doty Residence to Effects Screening Levels (ESLs) for Non-Criteria Pollutants

Air Contaminant	Averaging Time	Effects Screening Level ($\mu g/m^3$)	Maximum Predicted Level at the Harold Doty Residence ($\mu g/m^3$)	Percentage of the ESL
Ammonia	1 hour	170	1.06	0.62%
Ammonia	Annual	17	0.01	0.06%
Benzene	1 hour	170	2.74×10^{-3}	0.002%
Benzene	Annual	4.5	2.34×10^{-5}	0.0005%
Butane, n-	1 hour	66,000	3.01	0.005%
Butane, n-	Annual	7,200	5.54×10^{-5}	0.0000008%
Hexane, n-	1 hour	5,300	9.94×10^{-3}	0.0002%
Hexane, n-	Annual	200	1.47×10^{-6}	0.0000008%
Isobutane	1 hour	23,000	3.49	0.02%
Isobutane	Annual	7,200	7.31×10^{-5}	0.000001%
Isopentane	1 hour	3,800	0.08	0.002%
Isopentane	Annual	7,100	5.17×10^{-6}	0.00000007%
Pentane, n-	1 hour	4,100	0.02	0.0005%
Pentane, n-	Annual	7,100	1.61×10^{-6}	0.00000002%
Toluene	1 hour	3,470	1.51×10^{-3}	0.00004%
Toluene	Annual	1,200	1.28×10^{-5}	0.000001%
Xylene, p-	1 hour	250	5.63×10^{-4}	0.0002%
Xylene, p-	Annual	180	4.80×10^{-6}	0.000003%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 3b. Comparison of Maximum Predicted Air Contaminant Levels* at the Christopher Kall Residence to Effects Screening Levels (ESLs) for Non-Criteria Pollutants

Air Contaminant	Averaging Time	Effects Screening Level ($\mu g/m^3$)	Maximum Predicted Level at the Christopher Kall Residence ($\mu g/m^3$)	Percentage of the ESL
Ammonia	1 hour	170	1.20	0.70%
Ammonia	Annual	17	0.01	0.06%
Benzene	1 hour	170	2.90×10^{-3}	0.002%
Benzene	Annual	4.5	2.35×10^{-5}	0.0005%
Butane, n-	1 hour	66,000	3.07	0.005%
Butane, n-	Annual	7,200	5.12×10^{-5}	0.0000007%
Hexane, n-	1 hour	5,300	8.75×10^{-3}	0.0002%
Hexane, n-	Annual	200	1.30×10^{-6}	0.0000007%
Isobutane	1 hour	23,000	3.54	0.02%
Isobutane	Annual	7,200	6.64×10^{-5}	0.0000009%
Isopentane	1 hour	3,800	0.08	0.002%
Isopentane	Annual	7,100	4.30×10^{-6}	0.00000006%
Pentane, n-	1 hour	4,100	0.02	0.0005%
Pentane, n-	Annual	7,100	1.32×10^{-6}	0.00000002%
Toluene	1 hour	3,470	1.59×10^{-3}	0.00005%
Toluene	Annual	1,200	1.29×10^{-5}	0.000001%
Xylene, p-	1 hour	250	5.95×10^{-4}	0.0002%
Xylene, p-	Annual	180	4.82×10^{-6}	0.000003%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 3c. Comparison of Maximum Predicted Air Contaminant Levels* at the Melanie Oldham Residence to Effects Screening Levels (ESLs) for Non-Criteria Pollutants

Air Contaminant	Averaging Time	Effects Screening Level ($\mu g/m^3$)	Maximum Predicted Level at the Melanie Oldham Residence ($\mu g/m^3$)	Percentage of the ESL
Ammonia	1 hour	170	2.47	1.5%
Ammonia	Annual	17	9.09×10^{-3}	0.05%
Benzene	1 hour	170	3.47×10^{-3}	0.002%
Benzene	Annual	4.5	1.54×10^{-5}	0.0003%
Butane, n-	1 hour	66,000	2.28	0.003%
Butane, n-	Annual	7,200	3.49×10^{-5}	0.0000005%
Hexane, n-	1 hour	5,300	0.02	0.0004%
Hexane, n-	Annual	200	1.03×10^{-6}	0.0000005%
Isobutane	1 hour	23,000	2.76	0.01%
Isobutane	Annual	7,200	4.71×10^{-5}	0.0000007%
Isopentane	1 hour	3,800	0.11	0.003%
Isopentane	Annual	7,100	3.70×10^{-6}	0.00000005%
Pentane, n-	1 hour	4,100	0.03	0.0007%
Pentane, n-	Annual	7,100	1.17×10^{-6}	0.00000002%
Toluene	1 hour	3,470	1.91×10^{-3}	0.00006%
Toluene	Annual	1,200	8.47×10^{-6}	0.0000007%
Xylene, p-	1 hour	250	7.13×10^{-4}	0.0003%
Xylene, p-	Annual	180	3.16×10^{-6}	0.000002%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

Table 3d. Comparison of Maximum Predicted Air Contaminant Levels* at the Laura Jones Residence to Effects Screening Levels (ESLs) for Non-Criteria Pollutants

Air Contaminant	Averaging Time	Effects Screening Level ($\mu g/m^3$)	Maximum Predicted Level at the Laura Jones Residence ($\mu g/m^3$)	Percentage of the ESL
Ammonia	1 hour	170	2.76	1.6%
Ammonia	Annual	17	0.01	0.06%
Benzene	1 hour	170	4.19×10^{-3}	0.002%
Benzene	Annual	4.5	3.06×10^{-5}	0.0007%
Butane, n-	1 hour	66,000	2.98	0.005%
Butane, n-	Annual	7,200	3.25×10^{-5}	0.0000005%
Hexane, n-	1 hour	5,300	9.34×10^{-3}	0.0002%
Hexane, n-	Annual	200	1.19×10^{-6}	0.0000006%
Isobutane	1 hour	23,000	3.44	0.01%
Isobutane	Annual	7,200	4.24×10^{-5}	0.0000006%
Isopentane	1 hour	3,800	0.08	0.002%
Isopentane	Annual	7,100	2.85×10^{-6}	0.00000004%
Pentane, n-	1 hour	4,100	0.02	0.0005%
Pentane, n-	Annual	7,100	8.79×10^{-7}	0.00000001%
Toluene	1 hour	3,470	2.30×10^{-3}	0.00007%
Toluene	Annual	1,200	1.68×10^{-5}	0.000001%
Xylene, p-	1 hour	250	8.61×10^{-4}	0.0003%
Xylene, p-	Annual	180	6.28×10^{-6}	0.000003%

* For emissions from the Pretreatment Facility and the Liquefaction Plant

9. In conclusion, the maximum levels of all air contaminants to be emitted from the proposed Freeport LNG Liquefaction Plant in Freeport, Texas have been determined by air dispersion modeling. The predicted maximum impacts at each of the five Hearing Requestors' residences are small percentages of all Federal and State of Texas standards and guidelines, even when the emissions impacts from the proposed Freeport LNG Pretreatment Facility are included, and even considering the conservative assumptions that went into the dispersion modeling as mentioned above.

Those air quality standards and guidelines have been set at levels low enough to protect even the most sensitive members of the general population, including the very young, the very old, and people with pre-existing medical conditions such as asthma and other respiratory diseases and diseases of the cardiovascular system.

Going back to the very first point I made in this Affidavit, the maximum levels of air contaminants emitted from the proposed Liquefaction Project at the Hearing Requestors' residences (the "dose") are not great enough to cause any adverse effects (the "poison").

Because of these extra layers of conservatism, it is even more apparent that the Hearing Requestors will not be affected in any way by the emissions from the proposed Freeport LNG Liquefaction Plant. It is therefore my sworn opinion there is no need to have a Contested Case Hearing for this matter.

Thomas Dydek

Thomas Dydek, PhD, DABT, PE

Sworn and subscribed before me by Thomas Dydek on June 4, 2014.

Pamela Jo Mitchell

PAMELA JO MITCHELL
NOTARY PUBLIC
State of Texas
Comm. Exp. 10-22-2014

Notary Public in and for the State of Texas

My commission expires: 10/22/14

Class II SIL Results: Combined Modeling Impacts

Pollutant	Averaging Period	Year	SILs (µg/m³)	NAAQS (µg/m3)	Harold Doty		Christopher Kall		Melanie Oldham		Laura Calvo Jones		James Kall	
					X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing
					272427.0527	3201016.859	272335.9817	3201341.072	270482.876	3204427.245	276199.4793	3210817.56	275253.2671	3203023.83
					272,432	3,201,026	272,332	3,201,351	270,438	3,204,476	276,438	3,210,976	275,257	3,203,026
PM_{10}	24-hour	MAX of 2006-2010	5	150	0.36		0.31		0.21		0.50		0.44	
	Annual	2006	1	none	0.02		0.02		0.01		0.02		0.03	
		2007			0.02		0.02		0.02		0.02		0.03	
		2008			0.02		0.02		0.01		0.03		0.03	
		2009			0.02		0.02		0.02		0.03		0.03	
		2010			0.02		0.02		0.02		0.02		0.02	
$PM_{2.5}$	24-hour	2006-2010	1.2	35	0.24		0.24		0.18		0.36		0.33	
		MAX of 2006-2010	1.2	35	0.36		0.31		0.21		0.50		0.44	
	Annual	2006-2010	0.3	12	0.02		0.02		0.02		0.02		0.03	
		2006	0.3	12	0.02		0.02		0.01		0.02		0.03	
		2007			0.02		0.02		0.02		0.02		0.03	
		2008			0.02		0.02		0.01		0.03		0.03	
		2009			0.02		0.02		0.02		0.03		0.03	
		2010			0.02		0.02		0.02		0.02		0.02	
NO_2	ARM 1-hour	2006-2010	7.5	188	0.85		0.89		0.81		0.85		0.72	
	ARM Annual	2006	1	100	0.02		0.02		0.01		0.01		0.02	
		2007			0.02		0.02		0.01		0.01		0.02	
		2008			0.02		0.02		0.01		0.01		0.02	
		2009			0.02		0.02		0.01		0.01		0.02	
		2010			0.02		0.02		0.01		0.01		0.02	
CO	1-hour	2008	2,000	40,000	61.08		64.97		68.89		66.10		60.69	
	8-hour	2008	500	10,000	18.86		33.18		21.14		24.35		26.18	
SO_2	1-hour	2008	7.8	196	0.97		1.06		1.05		1.20		0.94	
	3-hour	2008	25	1300	0.41		0.52		0.50		1.00		0.41	
	24-hour	2008	5	365	0.11		0.15		0.07		0.27		0.15	
	Annual	2008	1	80	0.01		0.01		0.01		0.01		0.01	

Residence Coordinates

Closest Modeled Receptor Coodinates

* Based on dispersion modeling performed in July 2013.

UTM Coordinates (meters) NAD 83

State Property Line Analysis Results: Combined Modeling Impacts

				Harold Doty		Christopher Kall		Melanie Oldham		Laura Calvo Jones		James Kall		
				X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	
				272427.05	3201016.859	272335.98	3201341.072	270482.88	3204427.245	276199.48	3210817.56	275253.27	3203023.83	Residence Coordinates
Pollutant	Averaging Period	Year	Standard ($\mu g/m^3$)	272,432	3,201,026	272,332	3,201,351	270,438	3,204,476	276,438	3,210,976	275,257	3,203,026	Closest Modeled Receptor Coodinates
SO_2	30-min	2008	1021	0.97		1.06		1.05		1.20		0.94		
H_2S	30-min	2008	108	0.17		0.17		0.21		0.24		0.18		
H_2SO_4	1 hour	2008	50	0.07		0.08		0.08		0.09		0.07		
	24 hour	2008	15	0.01		0.01		0.01		0.02		0.01		

* Based on dispersion modeling performed in July 2013.
UTM Coordinates (meters) NAD 83

State Health Effects Evaluation (ESL Analysis): Combined Modeling Impacts

Constituents	CAS	TCEQ ESL		Harold Doty		Christopher Kall		Melanie Oldham		Laura Calvo Jones		James Kall		
				X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	X_Easting	Y_Northing	
				272427.0527	3201016.859	272335.98	3201341.072	270482.88	3204427.245	276199.48	3210817.6	275253.27	3203023.83	Resident Coordinates
		[ST]	[LT]	272432	3201026	272332	3201351	270438	3204476	276438	3210976	275257	3203026	Closest Modeled Receptor Coodinates
		µg/m^3	µg/m^3	ST µg/m3	LT µg/m3	ST µg/m3	LT µg/m3	ST µg/m3	LT µg/m3	ST µg/m3	LT µg/m3	ST µg/m3	LT µg/m3	
Ammonia	7664-41-7	170	17	1.06	0.01	1.20	0.01	2.47	9.09E-03	2.76	0.01	3.43	0.02	
n-Hexane	110-54-3	5,300	200	9.94E-03	1.47E-06	8.75E-03	1.30E-06	0.02	1.03E-06	9.34E-03	1.19E-06	0.01	8.41E-07	
Benzene	71-43-2	170	4.5	2.74E-03	2.34E-05	2.90E-03	2.35E-05	3.47E-03	1.54E-05	4.19E-03	3.06E-05	3.14E-03	2.65E-05	
Toluene	108-88-3	3,470	1,200	1.51E-03	1.28E-05	1.59E-03	1.29E-05	1.91E-03	8.47E-06	2.30E-03	1.68E-05	1.73E-03	1.45E-05	
p-Xylene	106-42-3	250	180	5.63E-04	4.80E-06	5.95E-04	4.82E-06	7.13E-04	3.16E-06	8.61E-04	6.28E-06	6.45E-04	5.43E-06	
Isobutane	75-28-5	23000	7200	3.49	7.31E-05	3.54	6.64E-05	2.76	4.71E-05	3.44	4.24E-05	2.69	5.04E-05	
n-Butane	106-97-8	66000	7200	3.01	5.54E-05	3.07	5.12E-05	2.28	3.49E-05	2.98	3.25E-05	2.25	4.23E-05	
Isopentane	78-78-4	3800	7100	0.08	5.17E-06	0.08	4.30E-06	0.11	3.70E-06	0.08	2.85E-06	0.09	1.71E-06	
n-Pentane	109-66-0	4100	7100	0.02	1.61E-06	0.02	1.32E-06	0.03	1.17E-06	0.02	8.79E-07	0.02	4.50E-07	

Based on dispersion modeling performed in July 2013.

UTM Coordinates (meters) NAD 83

ESL values obtained from TCEQ ESL list dated February 1, 2013, which were the ESL values in place at the time FLNG's applications were reviewed.

Exhibit 3

AFFIDAVIT
of
JOSEPH PATTERSON

THE STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF BRAZORIA §

BEFORE ME, the undersigned authority, on this day personally appeared **JOSEPH PATTERSON,** known to me to be a credible person of lawful age, who first being by me duly sworn and upon their oath depose and state the following:

"My name is Joseph Patterson. I am over the age of 25 years, have never been convicted of any crime involving moral turpitude, I have personal knowledge of every fact stated below, to wit:

1. I am licensed to practice law in the State of Texas, well experienced in real estate matters, including descriptions as well as conveyancing, and probate matters which affect the title to land.
2. I have researched the matter of ownership of real property located in Brazoria County, Texas by an individual named JAMES KALL. My research was performed in the land title records on file in the office of the County Clerk of Brazoria County, Texas, specifically the historical Deed Records, and more in more recent years, what are referred to as the Official Record, all of which are maintained in that office. These records are where all deeds or other conveyances of interests in real property are officially filed of record, thereby documenting land ownership in Brazoria County, Texas.
3. Attached hereto under labeling sheets marked Attachments 1, 2, 3 and 4 are copies, certified as true and correct by the County Clerk of Brazoria County, Texas of the following instruments:

    a. Under cover of sheet labeled Attachment 1, is a certified copy of a Quitclaim Deed dated June 3, 2003, executed by JAMES KALL releasing and quitclaiming to Christopher I. Kall, all right, title, and interest of JAMES KALL in a parcel of land described as Lots 26 and 27 in Block 7, Section 1, of the Bryan Beach Subdivision, per plat thereof recited therein to be of record at Plat Book 9, page 125 of the Plat Records maintained in the office of the County Clerk of Brazoria County, Texas. This Quitclaim Deed is of record under Clerk's File No. ("CFN") 2003-033062 in the Official Record maintained in the office of the County Clerk of Brazoria County,

Texas;

b. Under cover of sheet labeled Attachment 2, is a certified copy of a Correction Warranty Deed dated May 23, 2008, executed by JAMES KALL, as grantor, conveying to Christopher I. Kall, grantee therein, a parcel of land described as Lots 26 and 27 in Block 7 of Section No. 1 of the Bryan Beach Subdivision, per plat thereof of record at Plat Book 9, page 99 of the Plat Records maintained in the office of the County Clerk of Brazoria County, Texas. This Correction Warranty Deed is of record under CFN 2008-026449 in the Official Record maintained in the office of the County Clerk of Brazoria County, Texas;

c. Under cover of sheet labeled Attachment 3, is a certified copy of a Deed dated February 11, 2010, executed by JAMES KALL and Christopher I. Kall, as grantors, conveying to Joseph Mark Napier, grantee therein, a parcel of land described as Lots 1 and 12 in Block 72 in the Townsite of Quintana, per recorded map of plat thereof. This Deed is of record under CFN 2010-021384 in the Official Record maintained in the office of the County Clerk of Brazoria County, Texas; and

d. Under cover of sheet labeled Attachment 4, is a certified copy of a Warranty Deed dated August 26, 2011, executed by JAMES KALL, as grantor, conveying to Christopher I. Kall, grantee therein, a parcel of land described as Lots 2 and 11 in Block 72 in the Townsite of Quintana, per recorded map of plat thereof. This Warranty Deed is of record under CFN 2011-035599 in the Official Record maintained in the office of the County Clerk of Brazoria County, Texas.

4. Based upon a thorough and complete search of the official public records documenting the ownership of interests in real property in Brazoria County, Texas, JAMES KALL owns no interest in any parcel of land located in Brazoria County, Texas, the said JAMES KALL having conveyed all interests which he previously may have owned in real property in Brazoria County, Texas, between 2003 and 2011, by documents executed by him, certified copies of which are attached hereto.

Further Affiant sayeth not."

Joseph Patterson, Affiant

THE STATE OF TEXAS §
§
COUNTY OF BRAZORIA §

SUBSCRIBED AND SWORN to before me on this 3rd day of June, 2014, by Joseph Patterson, to certify which witness my hand and seal of office.

(SEAL)

Gena C. Patterson
Notary Public, State of Texas

GENA C PATTERSON
Notary Public, State of Texas
My Commission Expires
June 17, 2017

ATTACHMENT 1

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5.
5
1100
CASH

03 033062

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LF298-04
R298-04

QUITCLAIM DEED

THIS QUITCLAIM DEED, executed this 3rd day of June, 2003,
by first party, Grantor, JAMES KALL
whose post office address is 2550 DEEPSEA DR FREEPORT TX 77541
to second party, Grantee, Christopher I. KALL
whose post office address is 2550 DEEP SEA DR FREEPORT TX 77541

WITNESSETH, That the said first party, for good consideration and for the sum of
TEN DOLLARS Dollars ($ 10.00)
paid by the said second party, the receipt whereof is hereby acknowledged, does hereby remise, release and quitclaim unto the said second party forever, all the right, title, interest and claim which the said first party has in and to the following described parcel of land, and improvements and appurtenances thereto in the County of BRAZORIA, State of TEXAS to wit:

Lots 26 AND 27, Block 7, Section 1, BRYAN BEACH Subdivision IN The J. G. McNEEL Survey, Abstract 335, BRAZORIA County, TEXAS. According to the MAP or PLAT thereof Recorded in Volume 9, Page 125 PLAT Records of BRAZORIA County, TEXAS

AKAK

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

IN WITNESS WHEREOF, The said first party has signed and sealed these presents the day and year first above written. Signed, sealed and delivered in presence of:

Signature of Witness	Signature of First Party
Print name of Witness	Print name of First Party
Signature of Witness	Signature of First Party
Print name of Witness	Print name of First Party

State of TEXAS }
County of Brazoria }
On June 3, 2007 before me,
appeared JAMES KALL
personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.
WITNESS my hand and official seal.

Tonya Kay McCaghren
Signature of Notary

Affiant ____Known ✓ Produced ID
Type of ID TX DL
(Seal)

TONYA KAY MCCAGHREN
MY COMMISSION EXPIRES
FEBRUARY 24, 2007

State of }
County of }
On before me,
appeared
personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.
WITNESS my hand and official seal.

Signature of Notary

Affiant ____Known____Produced ID
Type of ID ____
(Seal)

Signature of Preparer
James Kall
Print Name of Preparer
2550 Deep Sea Dr Freeport TX 77541
Address of Preparer

AKAK

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

03 023982

FILED FOR RECORD
2003 JUN -3 A 11: 51

Joyce Hudman
COUNTY CLERK
BRAZORIA COUNTY TEXAS

STATE OF TEXAS
COUNTY OF BRAZORIA

I, JOYCE HUDMAN, Clerk of the County Court in and for Brazoria County, Texas do hereby certify that this instrument was FILED FOR RECORD and RECORDED in the OFFICIAL RECORD at the time and date as stamped hereon by me.

Joyce Hudman
County Clerk of Brazoria Co., TX

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

ATTACHMENT 2

50205921
ALAMO TITLE COMPANY 02

Doc# 2008026449

CORRECTION WARRANTY DEED

Notice of confidentiality rights: If you are a natural person, you may remove or strike any or all of the following information form any instrument that transfers an interest in real property before it is filed for record in the public records: Your social security number or your driver's license number.

THE STATE OF TEXAS §

COUNTY OF BRAZORIA § KNOW ALL MEN BY THESE PRESENTS:

That JAMES KALL, (hereinafter called "Grantor"), for and in consideration of the sum of TEN AND NO/100 ($10.00) DOLLARS and other good and valuable consideration paid to the undersigned by the Grantee herein named, the receipt and sufficiency of which are hereby acknowledged and confessed, HAS GRANTED, SOLD, and CONVEYED, and by these presents DOES HEREBY GRANT, SELL, and CONVEY unto CHRISTOPHER I. KALL, (hereinafter called "Grantee") whose present mailing address is _____

_____, subject to the reservations hereinafter made, all of the following described real estate, together with all improvements situated thereon (the "Property") lying and being situated in Brazoria County, Texas, more particularly described as follows:

Lots 26 and 27, in Block 7, of Section No. 1 of Bryan Beach, a subdivision in Brazoria County, Texas, according to the map or plat of said subdivision recorded in Volume 9, Pages 99-100 of the Plat Records of Brazoria County, Texas.

THIS CONVEYANCE IS MADE AND ACCEPTED SUBJECT to the following matters to the extent same are in effect at this time: Any and all restrictions, covenants, conditions, easements, mineral or royalty reservations and leases, if any, relating to the hereinabove described property, but only to the extent they are still in effect, shown of record in the public records of Brazoria County, Texas, and to all zoning laws, regulations and ordinances of municipal and/or other governmental authorities if any, but only to the extent that they are still in effect, relating to the hereinabove described property.

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

TO HAVE AND TO HOLD the Property, together with all and singular the rights and appurtenances thereto in anywise belonging and any right, title, and interest of Grantor in and to adjacent streets, alleys, and rights-of-way, unto the said CHRISTOPHER I. KALL, his heirs and assigns forever, and Grantor does hereby bind himself, his heirs and assigns, to WARRANT AND FOREVER DEFEND all and singular the Property unto Grantee, his heirs and assigns, against every person whomsoever lawfully claiming or to claim the same, or any part thereof, subject however, as aforesaid.

THIS DEED is made in place of and to correct and cure a prior Quitclaim Deed dated June 3rd, 2003, executed by James Kall to Christopher I. Kall, recorded under County Clerk's File Number 03-033062 in the Official Records of Brazoria County, Texas, and to further correct the legal description in said Quitclaim Deed.

This correction Deed is made by Grantor and accepted by Grantee to correct that mistake.

EXECUTED this 2nd day of May, 2008.

JAMES KALL

ACCEPTED BY GRANTEE:

CHRISTOPHER I. KALL

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

THE STATE OF TEXAS §

COUNTY OF BRAZORIA §

BEFORE ME, PENNY GRIMES the undersigned Notary Public, on this day personally appeared James Kall, known to me [or proved to me on the oath of _____ or through DRIVER'S LICENSE (description of identity card or other document)] to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE on the 23rd day of May, 2008.

(SEAL)

Penny Grimes
Notary Public, in the State of Texas

THE STATE OF TEXAS §

COUNTY OF BRAZORIA §

PENNY GRIMES
Notary Public
STATE OF TEXAS
My Comm. Exp. 03/13/2012

BEFORE ME, PENNY GRIMES the undersigned Notary Public, on this day personally appeared Christopher I. Kall, known to me [or proved to me on the oath of _____ or through DRIVER'S LICENSE (description of identity card or other document)] to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE on the 23rd day of May, 2008.

(SEAL)

Penny Grimes
Notary Public, in the State of Texas

After Recording, Please Return to:
Christopher I. Kall
2550 Deep Sea Dr.
Pearland, TX 77581

PENNY GRIMES
Notary Public
STATE OF TEXAS
My Comm. Exp. 03/13/2012

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

e-Recording
Doc# 2008026449
Pages 4
05/27/2008 09:47:21 AM
Official Public Records of
BRAZORIA COUNTY
JOYCE HUDMAN
COUNTY CLERK
Fees 24.00

Joyce Hudman

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

ATTACHMENT 3

Doc# 2010021384

4 N

DEED

THE STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF **BRAZORIA** §

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OF THE FOLLOWING INFORMATION FROM THIS INSTRUMENT BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

THAT **JAMES KALL and CHRISTOPHER I. KALL,** hereinafter called Grantor, whether one or more, for and in consideration of the sum of Ten Dollars ($10.00), and other good and valuable consideration to the undersigned cash in hand paid by the Grantee herein named, the receipt of which is hereby acknowledged, has GRANTED, SOLD AND CONVEYED, and by these presents does GRANT, SELL AND CONVEY unto **JOSEPH MARK NAPIER,** Grantee, the following real property:

Lots 1 and 12, Block 72, in the TOWNSITE OF QUINTANA, Brazoria County, Texas, according to the map and plat thereof, recorded in Volume 2, Page 39 of the Map Records and in Volume 32, Page 6 of the Deed Records of Brazoria County, Texas.

Grantee assumes and shall be obligated to pay all property taxes for the year **2010** and all subsequent years.

THIS CONVEYANCE is made and accepted subject to the following matters, to the extent same are in effect at this time: Any and all reservations, restrictions, covenants, conditions, easements and mineral reservations or leases, if any, relating to the hereinabove described property, but only to the extent they are still in effect and shown of record in the public records of **Brazoria** County, Texas; and to all zoning laws, regulations and ordinances of municipal and/or other governmental authorities, if any, but only to the extent that they are still in effect, relating to the hereinabove described property.

FURTHER THIS CONVEYANCE is made and accepted subject to any titles or rights asserted by anyone, including but not limited to, persons, corporations, governments or other entities, to tidelands, or lands comprising the shores or beds of navigable or perennial rivers and streams, lakes, bays, gulfs or oceans, or to lands beyond the line of the harbor or bulkhead lines as established or changed by any government, or to filled-in lands, or artificial islands, or to statutory water rights, including riparian rights or to the area extending from the line of mean low tide to the line of vegetation, or the rights of access to that area or easement along and across that area.

TO HAVE AND TO HOLD the above-described premises, together with all and singular the rights and appurtenances thereto in any way belonging, unto the said Grantee, Grantee's heirs, executors, administrators, successors and assigns forever; and Grantor does hereby bind Grantor's heirs, executors, administrators, successors and/or assigns to WARRANT AND FOREVER DEFEND, all and singular the said premises unto the said Grantee, Grantee's heirs, executors, administrators, successors and/or assigns against every person whomsoever lawfully claiming or to claim the same or any part thereof, by,

through or under Grantor, but not otherwise, except as to the reservations from conveyance and the exceptions to conveyance and warranty.

WITNESS THE GRANTOR this the 11 day of February, 2010.

JAMES KALL

CHRISTOPHER I. KALL

Address of Grantee:
2356 Autumn Mist Lane
League City, TX 77573

This instrument was prepared in the law offices of Girouard & Richardson, P.C. from information furnished by the parties and no examination has been made and no opinion has been given by the firm preparing this instrument as to the title to or the description of the property involved.

THE STATE OF TEXAS §
§
COUNTY OF BRAZORIA §

This instrument is acknowledged before me on the 11th day of February, 2010, by **JAMES KALL.**

NOTARY PUBLIC, STATE OF TEXAS

THE STATE OF TEXAS §
§
COUNTY OF BRAZORIA §

This instrument is acknowledged before me on the 11th day of February, 2010, by **CHRISTOPHER I. KALL.**

NOTARY PUBLIC, STATE OF TEXAS

IN ACCORDANCE WITH SECTION 61.025 TEXAS NATURAL RESOURCES CODE, THE FOLLOWING STATEMENT IS INCLUDED AS A PART OF THIS DEED.

DISCLOSURE STATEMENT REQUIRED IF PROPERTY IS LOCATED IN COASTAL AREA described in Section 61.025 of the TEXAS NATURAL RESOURCES CODE. All or part of the real property described in this Agreement is located seaward of the Gulf Intercoastal Waterway to its southernmost point and then seaward of the longitudinal line also known as 97° 12' 19" which runs southerly to the international boundary from the intersection of the center line of the Gulf Intercoastal Waterway and the Brownsville Ship Channel. If the property is in close proximity to a beach fronting the Gulf of Mexico, the Grantee is hereby advised that the public has acquired a right of use or easement to or over the area of any public beach by prescription, dedication, or presumption, or has retained a right by area of any public beach by prescription, dedication, or presumption, or has retained a right by virtue of continuous right in the public since time immemorial, as recognized in law and custom.

The extreme seaward boundary of natural vegetation that spreads continuously inland customarily marks the landward boundary of the public easement. If there is no clearly marked natural vegetation line, the landward boundary of the easement is as provided by Sections 61.016 and 61.017, Natural Resources Code.

State law prohibits any obstruction, barrier, restraint, or interference with the use of the public easement, including the placement of structures seaward of the landward boundary of the easement. STRUCTURES ERECTED SEAWARD OF THE VEGETATION LINE (OR OTHER APPLICABLE EASEMENT BOUNDARY) OR THAT BECOME SEAWARD OF THE VEGETATION LINE AS A RESULT OF NATURAL PROCESSES ARE SUBJECT TO A LAWSUIT BY THE STATE OF TEXAS TO REMOVE THE STRUCTURES.

The Grantee is hereby notified that the Grantee should seek the advice of an attorney or other qualified person before accepting this Deed or instrument of conveyance as to the relevance of these statutes and facts to the value of the property the Grantee(s) is hereby purchasing or contracting to purchase.

GRANTOR:

JAMES KALL

CHRISTOPHER I. KALL

GRANTEE:

JOSEPH MARK NAPIER

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

IN ACCORDANCE WITH SECTION 33.135, TEXAS NATURAL RESOURCES CODE, THE FOLLOWING NOTICE IS INCLUDED AS PART OF THE CONTRACT:

1. The real property described in and subject to this contract adjoins and shares a common boundary with the tidally influenced submerged lands of the state. The boundary is subject to change and can be determined accurately only by a survey on the ground made by a licensed state land surveyor in accordance with the original grant from the sovereign. The owner of the property described in this contract may gain or lose portions of the tract because of changes in the boundary.

2. The seller, transferor, or grantor has no knowledge of any prior fill as it relates to the property described in and subject to this contract.

3. State law prohibits the use, encumbrance, construction, or placing of any structure in, on, or over state-owned submerged lands below the applicable tide line, without proper permission.

4. The purchaser or grantee is hereby advised to seek the advice of an attorney or other qualified person as to the legal nature and effect of the facts set forth in this notice on the property described in and subject to this contract. Information regarding the location of the applicable tide line as to the property described in and subject to this contract may be obtained from the surveying division of the General Land Office in Austin.

GRANTOR:

JAMES KALL

CHRISTOPHER I. KALL

GRANTEE:

JOSEPH MARK NAPIER

Doc# 20100021384
Pages 4
05/21/2010 2:30PM
Official Public Records of
BRAZORIA COUNTY
JOYCE HUDMAN
COUNTY CLERK
Fees $28.00

Joyce Hudman

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

ATTACHMENT 4

WARRANTY DEED

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OR ALL OF THE FOLLOWING INFORMATION FROM ANY INSTRUMENT THAT TRANSFERS AN INTEREST IN REAL PROPERTY BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

THE STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF BRAZORIA §

THAT, **JAMES KALL**, a single person, owning, claiming and occupying other property as his homestead, (herein referred to as "Grantor"), FOR AND IN CONSIDERATION of the sum of TEN AND NO/100 DOLLARS ($10.00) in hand paid to Grantor by **CHRISTOPHER I. KALL** (herein referred to as "Grantee") whose mailing address is **2550 DEEP SEA DRIVE, QUINTANA, TEXAS 77541**, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, has GRANTED, SOLD and CONVEYED and by these presents does GRANT, SELL and CONVEY unto Grantee the following described real property located in BRAZORIA County, Texas:

LOT 2, AND 11, BLOCK 72, IN THE TOWNSITE OF QUINTANA, BRAZORIA COUNTY, TEXAS, ACCORDING TO THE MAP AND PLAT THEREOF, RECORDED IN VOLUME 2, PAGE 39 OF THE MAP RECORDS AND IN VOLUME 32, PAGE 6 OF THE DEED RECORDS OF BRAZORIA COUNTY, TEXAS

TO HAVE AND TO HOLD the Property together with all and singular the rights and appurtenances thereto in anywise belonging unto Grantee, its successors and assigns forever, subject to the matters herein stated; and Grantor does hereby bind itself and its successors and assigns to WARRANT AND FOREVER DEFEND all and singular the Property unto Grantee, its successors and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof, by, through or under Grantor, but not otherwise.

This conveyance is made and accepted subject to all restrictions, reservations, covenants, conditions, liens and easements, if any, relating to the Property, but only to the extent they are still in effect and shown of record in the hereinabove mentioned county and state, and to all zoning laws, regulations and ordinances of municipal and/or other governmental authorities, if any, but only to the extent that they are still in effect and relating to the Property.

The payment of all current ad valorem taxes and maintenance assessments (if any) not in default against The Land during this calendar year is hereby assumed by Grantee.

Whenever used in this document, unless the context clearly indicates a contrary intent or unless otherwise specifically provided herein, the pronouns of any gender shall include the other genders, including the neuter, and either the singular or plural shall include the other.

EXECUTED THIS THE 26 day of AUGUST, 2011

GRANTOR:

JAMES KALL

1

RECORDED BY
AMERICAN TITLE COMPANY
GF 1819-11-1048

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

THE STATE OF TEXAS §
§
COUNTY OF BRAZORIA §

This instrument was acknowledged before me on the 26 day of August, A.D., 2011, by JAMES KALL.

Debbie Wiemken
NOTARY PUBLIC, STATE OF TEXAS

DEBBIE WIEMKEN
Notary Public, State of Texas
My Commission Expires 03-24-2015

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

e-Recording
Doc# 2011035599
Pages 3
08/31/2011 11:37:03 AM
Official Public Records of
BRAZORIA COUNTY
JOYCE HUDMAN
COUNTY CLERK
Fees 20.00

Joyce Hudman

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

e-Recording
Doc# 2011035599
Pages 3
08/31/2011 11:37:03 AM
Official Public Records of
BRAZORIA COUNTY
JOYCE HUDMAN
COUNTY CLERK
Fees 20.00

Joyce Hudman

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

e-Recording
Doc# 2011035599
Pages 3
08/31/2011 11:37:03 AM
Official Public Records of
BRAZORIA COUNTY
JOYCE HUDMAN
COUNTY CLERK
Fees 20.00

Joyce Hudman

STATE OF TEXAS, COUNTY OF BRAZORIA
I certify that the above and foregoing is a full, true and correct photographic copy of the orignal record on file in my office including redactions, if any, of social security numbers. Given under my hand and seal of the court in my lawful custody and possesion
JOYCE HUDMAN, BRAZORIA COUNTY CLERK
By: _____, Deputy

EXHIBIT 4

ANALYSIS OF WHETHER ANY OF ISSUES RAISED BY THE HEARING REQUESTORS ON THE LIQUEFACTION PLANT CONSTITUTE RELEVANT AND MATERIAL DISPUTED ISSUES OF FACT

In this Exhibit 3, FLNG discusses the issues raised in the hearing requests filed by Harold Doty, Christopher Kall, and James Kall concerning FLNG's Liquefaction Plant permit application.[1] FLNG's Response to Hearing Requests demonstrates that no person or group is entitled to a contested case hearing on FLNG's Liquefaction Plant permit application. However, 30 Tex. Admin. Code § 55.209(e)(6) provides that a response to hearing request should address whether issues raised in hearing requests are relevant and material to the decision on the application. Accordingly, FLNG provides the following discussion in this Exhibit 3 of the relevance, or lack thereof, of issues raised by Mr. Doty and the Kalls. We emphasize that we believe that none of the hearing requestors is entitled to a hearing on the Liquefaction Plant permit, and that we are including this discussion in the alternative, should the Commission find that any requestor is entitled to a hearing.

A. Applicable Legal Analysis

The Commission may not refer an issue to SOAH for a contested case hearing unless the Commission determines that the issue: 1) involves a disputed question of fact, 2) was raised during the public comment period, and 3) is relevant and material to the decision on the application.[2] When referring a case to SOAH involving an application to be issued under the

[1] A discussion of the issues raised in the requests for hearing letters of the Group 2 (Melanie Oldham and Laura Jones) and Group 3 (County Road 792 Requestors) hearing requestors is not included here, because, as was demonstrated in Applicant's Response to Hearing Requests, none of the issues raised by these two groups of hearing requestors are relevant or material to the Liquefaction Plant.

[2] 30 TEX. ADMIN. CODE § 50.115(c).

Texas Clean Air Act, the Commission may specify the number and scope of the specific factual issues to be referred.[3]

For an issue to be relevant in a proceeding before the Commission, the issue must 1) involve a disputed question of fact and 2) be relevant and material to the application.[4] Information concerning an issue raised by a requestor is relevant if the information would have some effect upon the Commission's decision, if the information is true. Issues outside of the Commission's statutory or regulatory authority are not relevant to the proceeding. For the Commission to issue an air quality permit, the Application must comply with all applicable statutory and regulatory requirements.[5] The Commission may not consider requirements not specifically enumerated by applicable statutes, rules or regulations.[6]

B. Issues that are not relevant to TCEQ's review of the Liquefaction Plant permit application.

In the present case, the hearing requestors have raised numerous issues that are not relevant to the Commission's review of the Liquefaction Plant permit application. Those issues, and FLNG's response thereto, are set forth below.

1. Quintana has provided an Industrial District on the North End of the Island, which is the proper place for any plant expansion to be built. (Doty)
2. TCEQ should deny the permit due to plant placement close to his residential area. (Doty)

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[3] *Id.* § 55.211(b)(3)(A)(i).

[4] *Id.* § 50.115(c).

[5] *See generally* TEX. HEALTH & SAFETY CODE §§ 382.001 *et seq.*

[6] *See Starr County v. Starr Indus. Servs. Inc.*, 584 S.W.2d 352, 356 (Tex. Civ. App.—Austin 1979, writ ref'd n.r.e.); *see also* TEX. GOVT. CODE § 2001.004.

FLNG Response: Neither of these issues is relevant or material to the air application for the Liquefaction Plant. TCEQ has no jurisdiction over the siting of facilities or local land use issues, therefore, these two issues are not relevant and material to the application and should not be referred to SOAH for a hearing.

3. There are no plans for air monitoring for VOC and/or gas release with an automatic alarm system for residents to know when a problem exists. (Doty and James Kall)

FLNG Response: The TCEQ does not have the authority to require off-site, ambient air quality monitoring as a requirement of air quality permitting.[7] In fact, the ED states in his Response to Comments that "[t]he siting of ambient air quality monitors in outside the scope for an air permit application review."[8] Siting of public ambient air monitoring is used to address regional or area-wide concerns about the general air quality of the area, and monitoring does not determine the individual impact of emission sources. As such, this issue is not relevant and material to the application and should not be referred to SOAH. Similarly, requirements relating to automatic alarm systems are also beyond the purview of TCEQ review in the context of air permitting.

4. The current quality of the air in this area is already in poor condition and, as a nonattainment area, cannot afford any additional releases. (Christopher Kall)

FLNG Response: Quintana Island is in the Houston-Galveston-Brazoria ozone nonattainment area. Emissions of NOx and VOCs contribute to the formation of ozone. However, emissions of NOx from this facility will be only 13.9 tpy and VOC emissions will be 6.96 tpy. These are minor source levels. In addition, FLNG will fully offset its NOx emissions

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[7] *See* Executive Director's Response to Public Comment, *Application by Freeport LNG Development, L.P.* ("Executive Director's Response to Public Comment") at 14.

[8] *Id.*

from this entire project in a ratio of 1:1.3. Therefore, this facility will not have an impact on the nonattainment status of the area. This issue is not relevant or material to the air application and should not be referred to SOAH.

5. There are no monitoring stations on Quintana Island and there is a lack of monitors in the area (could only find 2 on the website for this area). (Christopher Kall)

FLNG Response: Monitoring stations will be located in areas for which there is a concern about air quality. As discussed above, the TCEQ has no authority to require ambient air monitoring of an applicants as a result of air permitting. This issue is not relevant or material to the air application and should not be referred to SOAH.

6. This facility along with the Pretreatment Facility is simply too close to residential areas and will pose a health risk. (Christopher Kall)

FLNG Response: Again, the TCEQ does not have jurisdiction over siting and land use issues. As previously discussed, emissions from this plant are so negligible that they will not pose a health risk. Those emissions are well below the levels that would qualify for a PBR. Moreover, the level of air contaminants at each hearing requestors' residence is so low that they will not be impacted. *See* Dydek Affidavit, Exhibit 2. This issue is not relevant and material to the application and should not be referred to SOAH.

7. Natural gas to be liquefied, as well as refrigerant gases (heavier than air), is not odorized for our protection as the case with household use of such gases. This creates an extremely dangerous situation for residents of Quintana. "We do not wish to become another 'West, Texas' disaster." (Doty, Christopher Kall and James Kall)

FLNG Response: Evaluation of this facility as it relates to the safety and welfare of the public is primarily the responsibility of the Federal Energy Regulatory Commission ("FERC") as

part of its development of a Final Environmental Impact Statement for the facility. Potential hazards associated with the presence of liquefied natural gas and refrigerant gases within the facility, and the safety of the public and the environment from those potential hazards, is not relevant in the context of air permitting. As such, this issue is not relevant and material to the application and should not be referred to SOAH.

C. Issues that may constitute relevant and disputed issues of fact.

TCEQ rules also require responses to hearing requests to address which issues raised in the hearing requests are disputed. 30 Tex. Admin. Code § 55.209(e)(2). The only relevant and material issue raised Mr. Doty, Christopher Kall and James Kall is the following:

1. Each of them claims that they will be impacted by the emissions from the proposed Liquefaction Plant and that their health will be affected.

We emphasize again that none of the hearing requestors is entitled to a hearing on the Liquefaction Plant permit application and that we are including this discussion in the alternative should the Commission find that any requestor is entitled to a hearing.